

SCIENCE LIBRARY

MAY 19 1922

Vol. 18, No. 12

PSYCHOLOGICAL REVIEW PUBLICATIONS

December, 1921

# Psychological Bulletin

EDITED BY

SHEPHERD L. FRANZ, GOVT. HOSP. FOR INSANE  
SAMUEL W. FERNBERGER, UNIV. OF PENNSYLVANIA (*Assistant Editor*)

HOWARD C. WARREN, PRINCETON UNIVERSITY (*Review*)

JOHN B. WATSON, NEW YORK (*J. of Exp. Psych.*)

JAMES R. ANGELL, YALE UNIVERSITY, (*Monographs*) AND  
MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)

WITH THE CO-OPERATION OF

B. T. BALDWIN, UNIVERSITY OF IOWA; W. V. BINGHAM, CARNEGIE INSTITUTE OF TECHNOLOGY; J. E. COOVER, STANFORD UNIVERSITY; W. S. HUNTER, UNIVERSITY OF KANSAS; K. S. LASHLEY, UNIVERSITY OF MINNESOTA; J. H. LEUBA, BRYN MAWR COLLEGE; M. F. MEYER, UNIVERSITY OF MISSOURI; R. M. OGDEN, CORNELL UNIVERSITY; R. S. WOODWORTH, COLUMBIA UNIVERSITY.

## CONTENTS

### Abstracts of Periodical Literature :

General, 629   Nervous System, 634   Sensation and Perception, 636.   Feeling and Emotion, 641.   Motor Phenomena and Action, 642.   Attention, Memory and Thought, 645.   Social Functions of the Individual, 647.   Special Mental Conditions, 650.   Nervous and Mental Disorders, 655.   Individual, Racial and Social Psychology, 657.   Mental Development in Man, 660.   Mental Evolution, 676.

Indexes, 677.

PUBLISHED MONTHLY BY THE

PSYCHOLOGICAL REVIEW COMPANY

41 NORTH QUEEN ST., LANCASTER, PA.,  
AND PRINCETON, N. J.

AGENTS: G. E. STECHERT & CO., LONDON (2 Star Yard, Carey St., W. C.); PARIS (16, rue de Condé)

Entered as second-class matter January 21, 1904, at the post-office at Lancaster, Pa., under the  
Act of Congress of March 3, 1879

# Psychological Review Publications

EDITED BY

HOWARD C. WARREN, PRINCETON UNIVERSITY (*Review*)  
JOHN B. WATSON, 244 MADISON AVE., NEW YORK (*J. of Exp. Psych.*)  
JAMES R. ANGELL, YALE UNIVERSITY (*Monographs*)  
SHEPHERD I. FRANZ, GOVT. HOSP. FOR INSANE (*Bulletin*)  
MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)

WITH THE CO-OPERATION OF  
MANY DISTINGUISHED PSYCHOLOGISTS

## PSYCHOLOGICAL REVIEW

containing original contributions only, appears bimonthly, January, March, May, July, September, and November, the six numbers comprising a volume of about 480 pages.

## PSYCHOLOGICAL BULLETIN

containing abstracts, critical reviews of books and articles, psychological news and notes, university notices, and announcements, appears monthly, the annual volume comprising about 720 pages. Special issues of the BULLETIN consist of general reviews of recent work in some department of psychology.

## JOURNAL OF EXPERIMENTAL PSYCHOLOGY

containing original contributions of an experimental character, appears bi-monthly, February, April, June, August, October, and December, the six numbers comprising a volume of about 480 pages.

## PSYCHOLOGICAL INDEX

is a compendious bibliography of books, monographs, and articles upon psychological and cognate topics that have appeared during the year. The INDEX is issued annually in May, and may be subscribed for in connection with the periodicals above, or purchased separately.

## PSYCHOLOGICAL MONOGRAPHS

consist of longer researches or treatises or collections of laboratory studies which it is important to publish promptly and as units. The price of single numbers varies according to their size. The MONOGRAPHS appear at irregular intervals and are gathered into volumes of about 500 pages.

Philosophical Monographs: a series of treatises more philosophical in character.

Library of Genetic Science and Philosophy: a series of bound volumes.

## ANNUAL SUBSCRIPTION RATES

Review: \$4.25 (Foreign, \$4.50). Review and Bulletin: \$9.00 (Foreign, \$9.50)  
Journal: \$4.25 (Foreign, \$4.50). Review and Journal: \$8.25 (Foreign, \$8.75)

Bulletin: \$5.00 (Foreign, \$5.25). Journal and Bulletin: \$9.00 (Foreign \$9.50)  
Any one of above with Index: \$1.25 additional.

Any two of above with Index: \$1.00 additional.

Review, Bulletin, and Journal: \$12.50 (Foreign, \$13.25).

Review, Bulletin, Journal, and Index: \$13.50 (Foreign, \$14.25).  
Current Numbers: Review or Journal, 80c; Bulletin, 50c; Index, 1.50.

Psychological Monographs: \$5.50 per volume (Foreign, \$5.80).

Current Issues: prices vary according to size.

Subscriptions, orders, and business communications may be sent direct to

## PSYCHOLOGICAL REVIEW COMPANY

41 N. QUEEN ST., LANCASTER, PA., OR PRINCETON N. J.  
FOREIGN AGENTS: G. E. STECHERT & CO., London (2 Star Yard Cary St.,  
W.C.); PARIS (16, rue de Condé) (r. n.)

Vol. 18, No. 12

December, 1921

THE

# PSYCHOLOGICAL BULLETIN

## I. GENERAL

630. BAADE, W., Zur Lehre von den psychischen Eigenschaften.  
*Zeits. f. Psychol.*, 1920, 85, 245-296.

Any complete system of psychology must take into consideration two attributes of mental life: general and circumscribed. The general attributes are those which mark off the observable phenomena of consciousness into ordered series of continua. Circumscribed attributes deal with more or less stereotyped functions of the organism which act as potential agents in determining the continuity of conscious phenomena. Circumscribed attributes are not unlike Semon's concept of engrams: they are acquired during an individual's experience and leave their trace as functional residua within the organism. In point of fact, various concepts are not wanting (*Angelegtheit*, *Engramm*, *Residuum*, *Disposition*), as explanatory principles of mind, but none goes far enough to include all those attributes which characterize the "dynamic" side of mind. The task which the study of circumscribed attributes sets for itself is the working out of a new "dynamology." The data of dynamology, or residual psychology, do not derive from direct observation, but from inference and statistical interpretation. Exceptional gifts of memory, lacunæ in memory, the arousal and course of associations, unusual associations, dissociations, and individual peculiarities in psychic dispositions, are some of the problems which dynamology must attack. In brief, dynamology must seek the causes for the origin, integration, and alteration of functional residua.

C. C. PRATT (Clark)

631. RIEDEL, Bemerkungen zur Eignungsprüfung bei Fahrzeugführerberufen. *Zeits f. angew Psychol.*, 1921, 19, 196-213.

Es interessiert besonders der Abschnitt über die Ausbildung des Prüfverfahrens. Es wird festgestellt, dass beim Versuch jetzt

noch veilfach eine von der Wirklichkeit grundverschiedene Leistung gefordert wird, und dass es sich dabei meist um Prüfung von Nebenleistungen handelt. Zu fordern ist Prüfung von Zentralleistungen, d. h. das Wesentliche eines komplizierten seelischen Vorgangs als Ganzes zu reproduzieren. An die Stelle der analytischen Arbeitsstudie tritt in diesem Falle die Einfühlung des Prüfenden in die Arbeit und der intuitive Entwurf der Prüfeinrichtung. An Einzelforderungen seien vermerkt: Der Prüfling muss stehen; Prüfung nicht im geschlossenen Raum; das Gesichtsfeld muss in seiner Ganzheit bewegt sein; es dürfen nicht nur plötzliche Reize verwendet werden; der Prüfling muss stumm bleiben; er muss Einfluss haben auf die Bewegung seines Gesichtsfeldes.

H. BOGEN (Berlin)

632. VALENTINER, S., Über das Mass der Abhängigkeit von Begabungen. (Korrelationslehre.) *Zeits. f. angew. Psychol.*, 1921, 18, 19-32.

Bei der Prüfung des Deuchlerschen Korrelationskoeffizienten  $s/n$ , wobei  $s$  die Vorzeichensumme,  $n$  die Anzahl der verglichenen Reihenglieder bedeutet, ergab sich, dass er nicht für alle Fälle anwendbar ist. Gestützt auf die Lehre von dem Verhältnis der wahrscheinlichen Abweichung zur wirklichen und auf die Lehre vom Fehlerintegral, schlägt V.  $s/2n$  als einen auf alle Fälle anwendbaren Koeffizienten für Koordination vor. Er schwankt zwischen 0 und Unendlich; die Zahl 2 bedeutet schon einen hohen Grad der Abhängigkeit.

H. BOGEN (Berlin)

633. MILES, W. R., The Pursuitmeter. *J. of Exper. Psychol.*, 1921, 4, 77-105.

This is a piece of apparatus to measure an individual's eye-hand coördination with reference to a moving object. The apparatus consists of an elaborate battery of four electric meters, a mechanical resistance disturber, and sliding resistance contact. The general principle is that of the Wheatstone bridge, and the task of the observer is to keep the indicator of one of the meters as near zero as possible by shifting the contact on the slide resistance to compensate for the changes in resistance introduced by the mechanical disturber. These changes cannot be foreseen, and the situation becomes a genuine pursuit of the shifting indicator needle. Interesting practice curves are obtained from the use of the instrument.

It may be employed for detecting the influence of superimposed nutritional factors, fatigue, industrial conditions, and the like.

J. CARLETON BELL (New York University)

634. WARREN, H. C., Psychology and the Central Nervous System.  
*Psychol. Rev.*, 1921, 28, 249-269.

Professor Warren believes "that the most appropriate and fruitful conception of psychology is to regard it as the branch which investigates all the phenomena directly concerned in organic stimulation, central adjustment, and response." This definition of psychology includes the facts of self-observation and of behavior.

The doctrines of parallelism and interactionism both regard mind as a substance in relation to another substance, body, thus assuming two sets of machinery for what might be accomplished equally well by a single set. The double aspect view is the simplest hypothesis. Professor Warren discusses two objections which have been raised to it.

The paper emphasizes the importance of central phenomena as opposed to the outward expressions which are dealt with so largely by the behaviorists. It also presents the view that introspective data should be interpreted as far as possible in neural terms; the "neurological standpoint" should be developed along with the standpoints of self-observation and behavior.

P. T. YOUNG (Illinois)

635. ENGLISH, H. B., Dynamic Psychology and the Problem of Motivation. *Psychol. Rev.*, 1921, 28, 239-248.

A discussion of motivation based primarily upon the views of James and McDougall, with special reference to hedonism.

P. T. YOUNG (Illinois)

636. BORING, E. G., The Stimulus Error. *Amer. J. of Psychol.*, 1921, 32, 449-471.

The term "stimulus-error" has given rise to much confusion because it has been allowed to make its way without any formal introduction, and because, although it insists upon a distinction between two contrasting positions, it classes one of them as an "error." "Scientific psychology in its inception assumed a distinction between mind and matter and the separate existence of observable mental data and observable physical data. Fechner's psychophysics sought to measure the mental data and to establish

their correlation with related physical data. The opponent of this point of view raised the *quantity objection*, arguing that mind is not possessed of magnitude and is therefore not desirable. Most of these objectors were attacking only the quantitative status of psychology and seeking to establish it as an essentially qualitative, but mental, science. Other objectors preferred, however, to keep psychology quantitative by conceiving of it as physical, as the psychology of the *capacity* of the organism for response to stimulus. The older psychology met the quantity objection by showing that the nonexistence of mental magnitude does not preclude mental measurement, but then sought to protect itself against incursion of the physical observational attitude of the psychology of capacity by styling that attitude the *stimulus-error*. The implication would be that a psychology of capacity does not need to avoid the stimulus-error, but rather should cultivate it. The thesis of this paper is, however, that recent researches have shown that the observational attitude which is directed upon the stimulus—the attitude of the stimulus-error—may sometimes lead to equivocal correlations of stimulus and response which, because equivocal, are unscientific. In the case of the limen of dual impression upon the skin, for example, a psychology of capacity must make use of introspective data if it is to attain its own ideals."

G. J. RICH (Pittsburgh)

637. TITCHENER, E. B., Functional Psychology and the Psychology of Act. I. *Amer. J. of Psychol.*, 1921, 32, 519-542.

The psychology of Ladd may be taken as broadly typical of the functional systems. For him, consciousness is indefinable; he attempts, therefore, to exhibit it, but fails to do so in an unequivocal manner. He operates with two distinct notions of consciousness: the notion of consciousness as the sum total of conscious states which make up the experience of an "I," and the notion of consciousness as the observing activity of this "I" itself. Under Ladd's definition of the physical, psychology is without the circle of the acknowledged sciences because of the uniqueness of its method and of the logical constitution and self-determination of its subject-matter. In many cases the duplication of consciousness leads to sheer logical confusion. Both his data and his logic are ambiguous, and the resultant is not an organized system. All the psychologists of function recognize, explicitly or implicitly, the distinction between the "activity" or "function" and the

"content" or "structure" of consciousness. This distinction reflects the distinction of organic function and organic structure found in current biology. The distinction is not one of scientific biology, but belongs to the great technology of medicine. Its adoption by psychologists is an outgrowth of the attempts of empirical psychology to continue its existence in the face of modern experimental psychology. Functional systems are disposed to correlate the phenomenon of consciousness and unreadiness or inadequacy of the nervous system, but this view does not square with the facts. Running through these functional systems under the surface is a steady current of teleology, which comes from the older empiricism. Yet the whole history of science goes to show that teleology is essentially non-scientific. Biology, after a full trial of teleological principles, is resolutely turning away from final causes to the patient accumulation of observed facts. This teleological attitude threatens the stability of psychology as an independent branch of knowledge. Functional psychology appears as a transitional stage, as a half-way house on the journey to philosophy or to technology, rather than as an abiding-place. The text-books of functional psychology tend to treat psychology as an introduction to philosophy or an aid to individual and social welfare.

G. J. RICH (Pittsburgh)

638. TITCHENER, E. B., On the Plan of the *Physiologische Psychologie*. *Amer. Jour. of Psychol.*, 1921, 32, 596-597.

G. J. RICH (Pittsburgh)

639. DUNLAP, K., A Rotator for Vestibular and Organic Stimulation. *J. of Comparative Psychol.*, 1921, 1, 365-367.

An electrically motor driven, rotating apparatus is shown by cut and is fully described. Four special features characterize this rotator: (1) An electro-magnetic clutch is designed for accelerating and decelerating the speed of rotation without jerks and abrupt shocks. (2) There is a disc on which can be attached either a chair or a reclining platform. (3) A device is furnished for obtaining kymographic records of the speed of rotation ten times in every rotation or in approximately every two seconds. And (4) the apparatus is very strong; without chair or platform it weighs 425 pounds. The apparatus is constructed in the physics workshop of Johns Hopkins University.

H. R. CROSLAND (Oregon)

640. HULL, C. L., A Device for Determining Coefficients of Partial Correlation. *Psychol. Rev.*, 1921, 28, 377-383.

The writer describes a mechanical device which is constructed so that coefficients of partial correlation may be immediately determined. It consists of a transparent stencil which may be placed over a ruled chart. The basic principle has been developed from that underlying Kelley's tables for the computation of partial correlations.

P. T. YOUNG (Illinois)

641. CALKINS, M. W., Fact and Inference in Raymond Wheeler's Doctrine of Will and Self-Activity. *Psychol. Rev.*, 1921, 28, 356-373.

Calkins presents a critical analysis of an experimental study of will which was made by Wheeler in 1913-15. She accepts the fact, found by Wheeler, that kinesthetic and organic processes are present in every type of voluntary choice; but she doubts the inference that awareness of self and the feeling of activity in choosing can be reduced to bodily sensations.

Typical quotations from the reports of Wheeler's subjects are given and along with them his own interpretations. Calkins states that these reports indicate an unanalyzable feeling of the self acting. "The outcome is a conception of the self in violation as both kinesthetically and 'actively' conscious."

P. T. YOUNG (Illinois)

## 2. NERVOUS SYSTEM

642. KAPPERS, C. U. A., On Structural Laws in the Nervous System; The Principles of Neurobiotaxis. *Brain*, 1921, 44, 124-147.

The factors that determine the structures in the nervous system, the forms of the neurones, their positions and connections, have puzzled the minds of many neurologists.

The first who accepted a tropistic influence to act a part in these structures and who also accepted a reciprocal tropistic influence of the central nervous elements on each other was Cajal. His findings concerning the shifting of nerve cells in the embryonic development are confirmed by comparative phylogenetic studies by the author. The appearance of a taxis, or tropism, termed

neurobiotaxis, occurring in the nervous system during life is recognized. Associated stimulation is found to be the determining factor in this neurotropic phenomenon. Only functional relationships between two regions can cause an axonal connection between these regions. It is seen that the relation of the dendrites and the ganglion cells in the nervous system is regulated in conformity with that law in psychology which has been known as the law of association, in which law the simultaneity or direct successivity of the excitations is the chief part. These facts are formulated as follows: (1) If several stimulative changes occur in the nervous system, the outgrowing of the chief dendrites, and eventually the shifting of the cells, takes place in the direction whence the largest number of stimulations go to the cell. (2) This outgrowing or shifting, however, only takes place between stimulatively correlated centers: temporarily correlated excitations acting in part also in the connections of axons.

This neurobiotactic process is based on bio-electric principles, and we have here a sort of galvanotropic process. (By galvanotropism is understood the phenomenon that a living being, or part of it, when influenced by a constant electric current of a very low potential, has the inclination to turn to a certain pole.) The axon grows away from the region of stimulation (stimulo-fugal tropism) whereas the dendrites grow in the direction of the stimulation (stimulo-petal tropism). The chemical composition of the different parts of the neurone determines the direction of tropism.

The fundamental law of neurobiotaxis not only shows that the fundamental law of association in psychology is also a neurobiotactic law, but it also shows how wonderfully polar the whole character of tract formation is, and how well it fits in with the class of bio-electric phenomena. The growth current of the budding axon finds its place of predilection in a neurone that has been in action shortly before; this principle of selection based on the influence of a just preceding state of function as forming a centre of attraction for other nervous currents or budding axons also helping us to understand the connections of the nervous system with the muscles.

A consideration of nerve histology from this standpoint may be useful in giving the missing link between the structural and functional features of the nervous system.

M. S. VITELES (Pennsylvania)

643. DAUTREBANDE, L. & HALDANE, J. S., Effects of the Respiration of Oxygen on Breathing and Circulation. *J. of Physiol.*, 1920-21, 55, 296-299.

The respiration of oxygen at increased barometric pressure increases the breathing and diminishes the pulse rate. These effects are presumably brought about by slowing of the blood flow through the tissues, which protects them against the poisonous action of the high oxygen pressure. The result of this slowing down will be that the "internal environment" of the tissues tends to be kept approximately constant, in spite of great variation in the external environment. We can then understand why it is that so high a pressure of oxygen is needed before the central nervous system is affected.

J. E. ANDERSON (Yale)

644. HILL, A. V., The Tetanic Nature of the Voluntary Contraction in Man. *J. of Physiol.*, 1920-21, 55, xiv-xvi.

Ordinary voluntary muscle contraction is shown by means of a hot wire sphygmograph and a galvanometer to be due to a tetanus, not to some kind of continuous stimulus produced by an unknown process. The fact that the electric change is discontinuous and the oscillations of a harmonic nature suggests that the separate impulses from the separate cells of the central nervous system are of the same frequency and in phase with one another.

J. E. ANDERSON (Yale)

### 3. SENSATION AND PERFECTION

645. GELB, A., and GOLDSTEIN, K., Psychologische Analysen hirnpathologischer Fälle auf Grund von Untersuchungen Hirnverletzter. FUCHS, V. W., Untersuchungen über das Sehen der Hemianopiker und Hemiambyopiker. 2. *Zeits. f. Psychol.*, 1921, 86, 1-143.

When visual stimuli fall upon that portion of a retina afflicted with hemianopia, the patient sees nothing. A somewhat similar condition obtains in hemiambyopia, except that in this condition visual acuity may vary in the affected area from zero to nearly normal. But when a visual stimulus is presented to hemianopes and hemiambyopes so that part falls on the defective area and part on the normal, it is usually perceived in totality of form, color, and extent. Numerous experiments with squares, circles, groups of dots and lines, and various other simple figures, point conclu-

sively to some central process of excitation which serves to supplement and complete the peripheral excitation proceeding from the stimulation of the normal portion of the retina upon which half of the visual object falls. This process cannot be of peripheral origin, for when that portion of the visual object which falls upon the defective region is altered, e.g., the end of an ellipse flattened out, the total perception comprehends the object in unaltered form. The author is inclined to reject Poppelreuter's notion that this process of supplementation derives from images and memorial residua; it is, rather, a *totalisierende Gesamtgestaltprozess* which unites normal and defective stimulation into clear vision, much after the fashion of the filling-out of the blind spot in normal vision.

C. C. PRATT (Clark)

646. BUSCH, A., Über die Ausfallserscheinungen nach Sehhirnverletzungen und einige Vorrichtungen zur Prüfung der optischen Orientierung und der Arbeitsanpassung. *Zeits. f. angew Psychol.*, 1921, 19, 156-170.

Aus der Lazaretpraxis heraus gibt Verfasser zunächst ein Bild vom Habitus des Sehhirnverletzten. Es werden die Abstumpfung des Gefühlslebens, passive Arbeitsweise, Einschränkung und Schwererweckbarkeit der Aufmerksamkeit, verminderte Ansprechbarkeit auf optische Reize, Feldblindheiten, Erschwerung des Form- und Bewegungserkennens, Mangel an zusammenfassendem optischen Erkennen kurz charakterisiert. Eingehend wird die Störung des optischen Orientierungsvermögens besprochen. Bei seiner Wichtigkeit für das künftige Berufsleben des Sehhirnverletzten ist eine genaue Kenntnis der Grade der Ausfallserscheinung notwendig. Es wird eine für den speziellen Zweck modifizierte Form des Labyrinthversuchs beschrieben, mit welcher der Grad der Störung exakt bestimmt werden kann. Ferner wird noch eine Vorrichtung zur Prüfung der Arbeitsanpassung Sehhirnverletzter beschrieben.

H. BOGEN (Berlin)

647. GOLDSCHMIDT, R. H., Klarsichtbrillen. *Zeits. f. angew. Psychol.*, 1921, 18, 321-326.

Die Klarsichtbrille besteht aus klarem, farblosem Glas mit angeschmolzenem annähernd kakifarbenem Überfangglas; aus dem letzteren allein oder aus diesem und dem klaren Glase sind elliptische Klarsichtlöcher (10 bis 15 mm horizontal und 1 bis 10 mm ver-

tikal) ausgeschliffen. Das Tragen einer solchen Brille bewirkt, wie zahlenmässig belegt wird, dass die Kakifarbe frisch, lebhaft wird, sich gleichsam aus dem Gelände hervordrägt, wie Rot aus grünem Rasen und sich viel schärfer von Feldgrau unterscheiden lässt. Je länger die Klarsichtbrille getragen wird, desto grösser ist die Entfernung, in der eine Kakischützenlinie eben noch sichtbar ist. "Es spricht bislang nichts dagegen, dass Chromoadaptations- und Klarsichtbrillen sich mit ganz entsprechendem Vorteil wie für Kaki (und Rot) auch für andere Farben herstellen und praktisch, z.B. zur Jagd auf bestimmtes Wild, benutzen liessen."

O. LIPMANN (Berlin)

648. DALLENBACH, K. M., Subjective Perceptions. *J. of Exper. Psychol.*, 1921, 4, 143-163.

In a study of visual perception with short exposures figures were occasionally reported which were not present on the cards. These were called "subjective reports" in contrast to the "objective reports" in which the report corresponded to the object presented. A detailed study was made of these subjective reports to determine their characteristics and the conditions under which they occurred. No differences in kind were noted between subjective and objective reports, but differences in degree led to the conclusion that subjective reports were both cognitively and attributively less clear than objective. Duration of exposure, quality of stimuli, practice and fatigue had no effect on the occurrence and distribution of subjective reports, but the significant factor was complexity of material. All of the observers gave fewer subjective reports in their descriptions of the five figure cards than in their accounts of the six figure cards. The exact relations between complexity of figure and subjective reports are still to be determined.

J. CARLETON BELL (New York University)

649. WELLS, F. L., KELLEY, C. M., and MURPHY, G., Comparative Simple Reactions to Light and Sound. *J. of Exper. Psychol.*, 1921, 4, 57-62.

Series of alternate reactions to light and sound were given to eleven subjects, and very much more extended observations were made on two of the authors. There are individual differences in sound-light reactions depending on the magnitude of the stimuli compared, and on the sensational value of the same stimuli for different subjects. Subjects with relatively short sound reaction

times do not have light reaction times decreased in the same degree. There is somewhat more individual difference in reaction time to sound than to light.

J. CARLETON BELL (New York University)

650. WELLS, F. L., KELLEY, C. M., and MURPHY, G., Effects Simulating Fatigue in Simple Reactions. *J. of Exper. Psychol.*, 1921, 4, 137-142.

In a series of 216 reactions the time in the second half is five per cent. greater than in the first. This is scarcely referable to fatigue in the ordinary sense of the term, since the muscular activity involved is negligible, and there is a rest period of 11 seconds between the reactions. The introspections show that the slightly darkened room, the regularity of the responses, and the monotony of the whole procedure induce ennui tending toward somnolence. This seems to carry with it a slightly increasing refractoriness to the reaction stimulus.

J. CARLETON BELL (New York University)

651. FERNBERGER, S. W., An Experimental Study of the "Stimulus Error." *J. of Exper. Psychol.*, 1921, 4, 63-76.

Titchener's distinction between stimulus attitude and process attitude is carried over to Friedländer's recent work on the perception of weights, and the author describes his own experiments with lifted weights designed especially to study the stimulus error. Three series of experiments were made with the instructions so varied as to focus attention on (a) the pressure sensations on the tips of the fingers, (b) the kinæsthetic sensations localized in the wrist, and (c) judgments of the weights themselves. Trained observers were able to follow these instructions satisfactorily. The interval of uncertainty is smaller for the third or stimulus attitude than for either of the others. The point of subjective equality does not seem to be affected by the different instructions. The author concludes that the results of a purely behavioristic study cannot be properly interpreted without the control of introspective report.

J. CARLETON BELL (New York University)

652. BRONNER, A. F., Apperceptive Abilities. *Psychol. Rev.*, 1921, 28, 270-279.

Definitions of apperception based upon standard works, and a discussion of some tests which measure apperceptive abilities.

P. T. YOUNG (Illinois)

653. WHITCHURCH, A. K., The Illusory Perception of Movement on the Skin. *Amer. J. of Psychol.*, 1921, 32, 472-489.

The purpose of this investigation was to determine whether the perception of cutaneous movement, like that of visual movement, could be aroused by successive stimulation, and in that case to determine its conditions and existential correlate. Two strengths of stimuli, mechanically applied, were used; one stimulating only the cutaneous organs, the other affecting the subcutaneous tissues as well. The stimuli were applied successively to marked pairs of pressure-spots, varying in their separation from 2 to 6 min. The observers reported under two instructions, either characterizing the perception aroused or else describing it in purely psychological terms. Full movement, bimembral movement, unimembral movement, intramembral movement, and no movement were reported. The optimal conditions for arousal of the perception of movement were found to be with cutaneous stimuli a duration of 150 σ and an interval of 100 σ, and with "subcutaneous" stimuli a duration of 150 σ and an interval of 75 σ. The most important conditions were the interval between the successive stimuli and the adjacency of the spots stimulated. Optimal movement occurred in 57 to 67 per cent. of the trials. The existential correlate of the cutaneous perception appeared to be an integration of quality, time and cutaneous extent: a pressure diffusing, growing, extending, in time.

G. J. RICH (Pittsburgh)

654. PRATT, C. C., Some Qualitative Aspects of Bitonal Complexes. *Amer. J. of Psychol.*, 1921, 32, 490-515.

The method of paired comparisons was utilized to single out for examination certain phenomenological characteristics of the total impression set up by two simultaneous tones. The twelve musical intervals within the octave were used, the tomes being produced by variators. In the preliminary experimentation, the complexes were compared on the basis of unitariness, which proved to be an equivocal instructional determinant. In the principal series, the instructions were made more definite, so as to limit the judgments to a single factor. Comparisons were made on the basis of smoothness-roughness, simplicity, complexity, pleasantness and unpleasantness, and non-auditory processes and concomitant visual and kinæsthetic processes. On the basis of the tabulated and graphically presented results, every interval was sep-

arately characterized. The rank-order of certain of the complexes, especially the thirds and sixths, was more affected by change of attitude than was the rank-order of the others. This fact may explain the lack of agreement in the literature concerning the rank-order of these particular intervals.

G. J. RICH (Pittsburgh)

655. MALMUD, R. S., The Integration of Punctiform Warmth and Pressure. *Amer. J. of Psychol.*, 1921, 32, 571-574.

Simultaneous excitation of punctiform warmth and pressure was produced by stimulating with a warmed point spots that responded both to pressure and to warmth, and also by first arousing a warmth without pressure and then exciting separately a neighboring pressure-spot. Fusion took place when both pressure and warmth were of same degree of clearness and were localized in the same area. The fusions were characterized either as warm-pressure or pressure-warmths. The adjectival quality was the less intensive and seemed to form a constituent of the other. Supplementary experiments failed to show any typical experience of warm-wet.

G. J. RICH (Pittsburgh)

#### 4. FEELING AND EMOTION

656. CORWIN, G. H., The Involuntary Response to Pleasantness. *Amer. J. of Psychol.*, 1921, 32, 363-370.

The observers in this experiment were placed in situations which invited seeking movements if they desired to retain a pleasant stimulus, as well as movements of withdrawal if they desired to avoid an unpleasant stimulus. Olfactory, cutaneous, and auditory stimuli were used. Introspective reports were obtained of "all muscular tendencies and organic sensations in any way related to the affective reaction." In addition, in the olfactory experiment, a graphic record was made of movements of the head. Definitely seeking or maintaining reactions to pleasant stimuli were found in 84.3 per cent. of the total number of pleasant cases. The most natural response to unpleasantness is a movement of withdrawal; the direct response of the organism to pleasantness is either relaxation with a certain degree of expansion, or a definite activity of pursuit.

G. J. RICH (Pittsburgh)

657. McDougall, W., Belief as a Derived Emotion. *Psychol. Rev.*, 1921, 28, 315-327.

In the discussion under review McDougall asks: "What . . . is the nature of that peculiar mode of being conscious which we call belief?" He agrees with those psychologists who classify belief as an emotion. It is not a primary emotion, but resembles the primary type in that it impels to action. Neither is it a compound emotion, made by the blending of two or more primaries. Belief is a derived emotion which should be placed in the same class as confidence, hope, anxiety, despondency, despair and regret.

Belief and doubt are related to each other in much the same way that confidence and anxiety are related. The former pair (belief and doubt) are upon the plane of intellectual striving while the latter pair (confidence and anxiety) are upon the plane of practical action. McDougall affirms that his view agrees with James' pragmatism.

P. T. YOUNG (Illinois)

### 5. MOTOR PHENOMENA AND ACTION

658. ARGELANDER, A., Beiträge zur Psychologie der Übung I. Übungsfähigkeit und Anfangsleistung. *Zeits. f. angew. Psychol.*, 1921, 19, 1-38.

Übungsversuche von zotägiger Dauer an der Schreibmaschine. Der Hauptversuch besteht in einfachem Textabschreiben. In vier Nebenversuchen werden die Einzelkomponenten des Arbeitskomplexes unter der Problemstellung des Hauptversuchs vergleichend untersucht. Die quantitative Auswertung ergibt: 1. Versuchspersonen mit geringer Anfangsleistung zeigen einen hohen Übungszuwachs; bei Vpn. mit hoher Anfangsleistung ist der Übungszuwachs geringer. 2. Die individuellen Differenzen der Anfangsleistung werden durch die Übung weitgehend ausgeglichen. 3. Die Grösse des prozentuellen Übungsfortschritts von einem Tag zum andern ist erheblich bedingt durch die absolute Höhe der Leistung an dem ersten der beiden Tage.—Die qualitativ Auswertung lässt eindeutige Gesetzmässigkeiten nicht erkennen.

H. BOGEN (Berlin)

659. HEINITZ, W., Untersuchungen über die Fehlleistungen beim Maschinenschreiben. *Zeits. f. angew. Psychol.*, 1921, 18, 33-49.

Zeigt, wie die Fehlerstatistik zu benutzen ist, um bis zu einem gewissen Grade Aufschluss über die Ursachen der Fehlleistungen

beim Maschinenschreiben zu erhalten. Die von H. gewonnenen Ergebnisse sind wenig sicher erkannt und begründet, wichtiger sind die programmatischen Andeutungen, die in der Arbeit enthalten sind und Wege für die künftige Forschung weisen.

H. BOGEN (Berlin)

660. SZYMANSKI, J., Vergleichende Studie über den Arbeitsvorgang.  
*Zeits. f. angew. Psychol.*, 1921, 18, 1-18.

An einem Ergographen, dessen Bau es gestattete, mussten Insekten, Fische, Vögel, Säugetiere, 3-5 jährige Kinder, geistig abnorme und normale Erwachsene gleichartige Arbeit verrichten. Es lassen sich zwei Typen für die allgemeine Form der Kraftentfaltung unterscheiden: Kräftige, stossartige resp. kontinuierlich langsame Form der spontanen Kraft entfaltung. Ursachen der Typengliederung sind erkennbar. Ein Teil der Individuen: Hunde, Katzen, Ferkel, geistig Normale und ein Teil der Abnormalen sind bei annähernd maximaler Belastung fähig zur Arbeit aus inneren Impulsen. Zum entgegengesetzten Typus gehören alle die Arten, die sich leicht in den Zustand der temporären Bewegungslosigkeit versetzen lassen. Die Fähigkeit, ein Arbeitssystem einzuhalten, ist auch artweise festlegbar.

H. BOGEN (Berlin)

661. v. HATTINGBERG, H., Trieb und Instinkt. Ein definitorischer Versuch. *Zeits. f. angew. Psychol.*, 1920, 17, 226-258.

Versucht die Unklarheiten zu überwinden, die aus einer als falsch anzusprechenden Verteilung beider Begriffe auf den Menschen einerseits und auf das Tier andererseits herrühren. Trieb und Instinkt sind für H. synonyme Begriffe. "Realisationen von Trieben sind typische Anderungen im Gesamtverhalten der Menschen und Tiere, die in typischen Situationen auftreten (Phasenwechsel des Benhmens). Sie sind angeborene, jedoch im Individualleben mehr oder weniger modifizierbare Zusammenhänge von Funktionen, die von einem typischen Anfangszustande des Organismus (Bedürfnis) ausgehen und zu einem typischen Endzustand hinführen. Triebe oder Instinkte sind Richtungen solcher Abläufe, die beim Menschen mehr oder weniger bewusst, jedoch auch völlig unbewusst vor sich gehen können."

H. BOGEN (Berlin)

662. KRÖGER, H., Eine psychologische Differenzierung der Männer- und Frauenarbeit auf niedriger Kulturstufe. *Zeits. f. angew. Psychol.*, 1921, 18, 100-106.

Auf niedriger Kulturstufe besteht ein grundsätzlicher Unterschied zwischen den Arbeitsmotiven der Geschlechter. Die Zweige der wirtschaftlichen Arbeit, die vom Manne ihren Ausgang nehmen, insbesondere Tierzucht, zahlreiche Arten der stoffumformenden Tätigkeiten und der Handel sind aus mystischen Gefühlen und verworrenen metaphysischen Vorstellungen über Steigerung der eigenen seelischen und körperlichen Kräfte durch Aneignung solcher Wesen und Dinge entstanden, denen magische Kräfte innewohnen sollen. Die wirtschaftlichen Arbeiten der Frau, besonders der Ackerbau, haben ihre Wurzel in der Befriedigung des Existenzbedürfnisses, das aus Mutterinstinkt und Kindesliebe hervorging.

H. BOGEN (Berlin)

663. PERRIN, F. A. C., An Experimental Study of Motor Ability. *J. of Exper. Psychol.*, 1921, 4, 24-56.

The purpose of this investigation was to analyze motor ability. Three complex motor tests and fourteen elementary motor tests were given to 51 university juniors and seniors, their intelligence was measured by the Army Alpha scale, their university grades were computed, and their characters estimated by several judges. In the discussion of his results the author states that motor ability is not general but is somewhat highly specialized. A factor of general motor ability may exist, but if it does, it is lost in combination with other, non-motor factors as the subject proceeds from one motor test to another. The data seem to negate the theory that a complex motor performance can be explained in terms of a number of unit motor functions. Intelligence, as measured by psychological tests and college grades, seems to have little connection with motor performance. There was some correspondence between the ratings on the character chart and the scores in the motor tests, but not enough to enable one to indicate traits of character from motor scores. On the whole it seems clear that even the simplest motor adjustment involves a play of factors not isolated through standard experimental precautions. The most important of these factors are transfer, learning, and emotional or temperamental attitudes.

J. CARLETON BELL (New York University)

664. HARTMAN, G. N., and McDONOUGH, D. L., On Arterial Expansion. *Amer. J. of Psychol.*, 1921, 32, 516-518.

Quantitative measures were made of the change in volume of the arm under three sets of conditions: pressure from a sphygmomanometer; holding the breath; and mental work. The study suggests a method for dealing with vascular changes in a quantitative way. Under the conditions of the experiment increases in volume of blood in the forearm which approached the limits of elasticity of the vascular system were not obtained. The combination of sphygmomanometer and plethysmograph appears to give a better determination of arterial elasticity than does the present medical clinical method.

G. J. RICH (Pittsburgh)

665. KANTOR, J. R., How Do We Acquire Our Basic Reactions? *Psychol. Rev.*, 1921, 28, 328-355.

The paper is a discussion of the manner in which fundamental types of behavior are developed. The author criticizes the common views of instinct, contending that behavior should be described in terms of stimulus and response.

The topical headings are as follows: the integrative character of psychological reactions and innate responses; the subtlety and rapidity of the process of acquiring reaction systems; the rôle of stimuli in the acquisition of reactions; classes of conditioning stimuli; how stimuli function in the acquisition of reactions: (A) the casual stimulation processes, (B) the deliberate process of stimulation; distinction between stimulating situations and biological environment; types of behavior equipment (ten types mentioned); how play illustrates the intermingling of behavior types; the integrative basis for dissociation; the biological basis for the integration and acquisition of reaction systems; conclusion.

P. T. YOUNG (Illinois)

## 6. ATTENTION, MEMORY AND THOUGHT

666. BOUMAN, L., and GRÜNBAUM, A. A., Kasuistischer Beitrag zur Vorstellungpsychologie. *Zeits. f. Psychol.*, 1920, 85, 297-306.

An investigation into the imaginal type of a patient who suffered from extreme "flight from reality" compulsions bore witness to an abundance and variety of visual imagery. All of the patient's

day-dreams, in fact, which had any trace of egocentric motivation were rich in visual, as well as auditory and tactual images. But when tested in simple memory experiments with nonsense syllables, he gave evidence of peculiarly weak power of visualization. The imaginal type of the patient varied with the kind of motivation in back of the ideation.

C. C. PRATT (Clark)

667. VIEWEG, J., Die Stufen der geistigen Entwicklung. Eine Untersuchung zur Aussage-Psychologie an Erwachsenen und Kindern mit Hilfe des Kinematographen. *Zeits. f. angew. Psychol.*, 1921, 18, 250-306.

Versuchspersonen waren 21 Erwachsene und 76 Kinder. Dargeboten wurden kurze Filmstreifen mit wenig komplizierten Lebensvorgängen. Die von W. Stern aufgestellten Stufen der Entwicklung (Substanz-, Aktions-, Qualität-Relationsstadium) werden als gültig bestätigt. Die von Cohn-Dieffenbacher umgrenzte vierte Stufe (kritisch-reflektierende) ist ebenfalls deutlich nachweisbar. Der Altersfortschritt der beiden Geschlechter ist fast gleichartig. Das männliche Geschlecht übertrifft an Umfang der Aussage und im Mass des Wissens. Die Zuverlässigkeit und Vorsicht der Aussage ist beim weiblichen Geschlecht grösser. Der Altersfortschritt der geistigen Leistung wird mit zunehmendem Alter geringer.

H. BOGEN (Berlin)

668. LINDWORSKI, J., Psychische Vorzüge und Mängel bei der Lösung von Denkaufgaben. Ein Beitrag zum Intelligenzproblem. *Zeits. f. angew. Psychol.*, 1921, 18, 50-99.

Verf. gibt die erste Arbeit aus einer Untersuchungsreihe zur empirischen Erforschung des Wesens der Intelligenz. Gebildete Erwachsene hatten syllogistische Denkaufgaben zu lösen und nach der Lösung den begleitenden Eigenerlebnisse zu Protokoll zu geben. Eine Analyse der an der Lösung beteiligten Faktoren zeigt, dass ein Unterschied in der Disposition zum Vollziehen des Beziehungsaktes nicht anzunehmen ist. Ausschlaggebend für die Güte der Leistung scheinen in erster Linie Vorzüge und Mängel der Vorstellungsentfaltung und eine gewisse formale logische Schulung zu sein. Besonders wichtig ist die Ergiebigkeit der Vorstellungsentfaltung. An Einzel- und Massenversuch wird verifiziert, dass die Analyse alle wesentlichen Komponenten der Güte der Denkleistung erfasst hat.

H. BOGEN (Berlin)

669. HULL, C. L., and LUGOFF, L. S., Complex Signs in Diagnostic Free Association. *J. of Exper. Psychol.*, 1921, 4, 111-136.

Jung has claimed that there are specific signs that may be taken as diagnostic of emotional complexes, and these signs have been generally accepted and used in psycho-analysis without critical examination. Among these signs are long reaction time, total lack of response, extremely short reaction times, repetition of the stimulus word, strange or apparently senseless reactions, and perseveration. The authors made a critical investigation of the significance of these signs on the basis of 10,000 free association reactions from 100 subjects, 50 men and 50 women. Jung's well-known list of 100 association words was used, and the value of the words as indices of emotional complexes is plotted. Of all the signs studied repetition of the stimulus word seemed to be the most reliable. Long reaction time seemed to be a significant indication, but in many cases was due to intellectual misunderstandings rather than emotional complexes.

J. CARLETON BELL (New York University)

670. SPENCER, L. T., An Experiment in Time Estimation Using Different Interpolations. *Amer. J. of Psychol.*, 1921, 32, 555-562.

The subjects were required to estimate time intervals by reproducing them. Four intervals were used: 15 sec., 30 sec., 60 sec., and 100 sec. The 30-sec. interval was used both without interpolation and with five types of interpolation; the other intervals were given without interpolation. The results obtained by the method of reproduction were more accurate than those obtained by previous investigators by the method of statement in terms of the standard unit. The error of the latter method, due to preferences for certain final digits, was computed and the results thus corrected shown to agree with the data from this experiment. All intervals were overestimated. Poetry as an interpolation increased the overestimation, while dictation had the opposite effect.

G. J. RICH (Pittsburgh)

## 7. SOCIAL FUNCTIONS OF THE INDIVIDUAL

671. HUTH, A., Gedanken zur psychologischen Grundlegung des Klavierunterrichts. *Zeits. f. angew. Psychol.*, 1921, 18, 115-121.

Will die psychologische Erkenntnis, auf der moderne Anfangs-

unterricht in Deutschland basiert, auch auf das Erlernen des Klavierspiels angewendet wissen. Die Methode soll also analytisch sein und vom musikalischen Ganzen, Harmonie und Melodie ausgehen. Das Erlernen der reinen Fingertechnik hat erst dann einzusetzen, wenn sie dem Lernanfänger spontan zum Eigenproblem wird.

H. BOGEN (Berlin)

672. SACHS, H., Studien zur Eignungsprüfung der Strassenbahnführer. I. Methode zur Prüfung der Aufmerksamkeit und Reaktionsweise. *Zeits. f. angew. Psychol.*, 1920, 17, 199–225.

Die Arbeit hat wissenschaftlich grundlegende Ziele. Aufmerksamkeit und Reaktionsweise werden in ihrem Zusammenhang geprüft. Die Versuchsanordnung ist so, dass die Gesamtstruktur des psychischen und psychophysischen Verhaltens im Laboratorium mit der in der Praxis Ähnlichkeit besitzt. Der Schwerpunkt des Versuchs liegt in der Feststellung des Verhaltens der Prüflinge zu ungewohnten "reaktionsfordernden Reizen" und zu Reizen, die möglicherweise (perhaps) nach einiger Zeit eine Reaktion verlangen. Die Prüflinge wurden erst eingebütt und ihre Zuordnungsfähigkeit (ability of coördination) festgestellt. Der Eichungsversuch ergab die praktische Verwendbarkeit, ferner trat klar zutage, dass eine besondere Prüfung der Entschlussfähigkeit und der Fähigkeit zur Abschätzung von Bewegungen die notwendigsten Ergänzungen des Verfahrens darstellen.

H. BOGEN (Berlin)

673. SCHULTE, R. W., Die Berufseignung des Damenfriseurs. Methoden und Ergebnisse eines psychotechnischen Prüfsystems auf Grund einer Funktionsanalyse. *Zeits. f. angew. Psychol.*, 1921, 19, 100–155.

I. Gang de Ausarbeitung einer eignungspsychologischen Methodik. II. Die Berufsanalyse des Damenfrisierens: 1. Allgemeine methodische Gesichtspunkte, 2. Spezielle psychophysiologische Funktionsaufteilung (Kämmen, Ondulieren, Frisieren). III. Schilderung der Versuchsverfahren und der Ausführung der Versuche: 1. Physische Tauglichkeit. 2. Psychophysische Eigenschaften: motorischer und sensorischer (Art. "Kämmapparat," "Wendeprüfer," "Drehprüfer," "Vibrationsprüfer," Ergograph, Disordinationstest, "Augenmassprüfer"). 3. Psychische Fähigkeiten:

Aufnahme, Retention und Verarbeitung von Vorstellungen (Rotationstachistoskop, Untersuchung optischer Gedächtnisleistungen nach der Wiedererkennungsmethode, Bindeworttest, Zahlenquadrat-test, Brieftest, aesthetische Urteilsbildung). 4. Charakterologische Eignung. IV. Die Ergebnisse: 1. Wirtschaftliche, Fehler- und Leistungsstatistik (Ergebnisse von 133 beantworteten Fregabogen, Fehlerverteilungskurven). 2. Übungsversuche. 3. Gesamtgutachten (Personalbogen und Profil). 4. Bewährungsstatistik.

O. LIPMANN (Berlin)

674. STERN, E., Ergebnisse von industriellen Berufseignungsprüfungen. *Zeits. f. angew. Psychol.*, 1921, 18, 335-341.

Stern hat an 22 Betriebe eine Umfrage gerichtet, um Näheres über die in diesen Betrieben veranstalteten Eignungsprüfungen zu erfahren. Verwertbar waren 11 Antworten. Aus diesen Antworten wird geschlossen, 1. dass meist die Erfahrungen noch nicht ausreichen, um die Bewährung der Eignungsprüfung in der Praxis sicher beurteilen zu können, 2. dass die Prüfung nur von wirklich psychologisch geschulten Personen vorgenommen werden sollte, 3. dass die Einstellung nicht allein auf Grund der Prüfung erfolgen sollte, wie dies bisher vorwiegend der Fall war, sondern dass das Psychogramm unter allen Umständen mitberücksichtigt werden sollte.

O. LIPMANN (Berlin)

675. BEDAUX, C. E., The Bedaux Unit Principle of Industrial Measurement. *J. of Applied Psychol.*, 1921, 5, 119-126.

"This article is copyrighted by the author, and the reproduction in any form is forbidden except by his express permission."

E. MULHALL ACHILLES (Columbia)

676. STINCHFIELD, S., The Standardization of Speech Testing Material. *Quarterly J. of Speech Ed.*, 1921, 7, 360-369.

The description of a set of articulation tests in use in the Department of Speech at the University of Wisconsin. The tests have been devised to serve as a measuring scale of speech attainment. They aim to include all the sounds in the English language, "used in the various positions in which they occur and according to a strong or weak position in the sentence." Two of the tests, with the examiner's score card for each, are published with the article.

A. M. JONES (Pennsylvania)

677. BUTLER, P., Church History and Psychology of Religion.  
*Amer. J. of Psychol.*, 1921, 32, 543-551.

The contributions of psychologists to religious problems have been largely confined to the religious experience of normal men and women. Yet the most difficult problem for the student of ecclesiastical history is understanding the mind of a religious genius who dominates his followers. Much time and labor has been spent by historians in efforts to trace out, by philological evidence alone, influences and origins of constituent ideas and practices in various systems. This method has led to evident fallacies, as shown in several examples. Psychologists have studied the records of religious leaders of the past instead of turning their attention to those leaders who are in every generation appearing and winning converts to their faith. The historian of the church is in need of information about the religious genius, his personal disciples, and the ordinary adherents to his system.

G. J. RICH (Pittsburgh)

#### 8. SPECIAL MENTAL CONDITIONS

678. HEYMANS, G., und BRUGMANS, H. J. F., Eine Enquête über die spezielle Psychologie der Träume. *Zeits. f. angew. Psychol.*, 1921, 18, 201-224.

Auf Grund einer Umfrage an 28 Psychologie Studierende ergab sich, "dass nahezu überall ein enger Zusammenhang zwischen den Eigenschaften und Verhaltungsweisen des wachen Lebens und dem spezifischen Charakter des Traumes besteht. Insbesondere haben wir eine Gruppe von eng zusammenhängenden Eigenschaften kennen gelernt (Emotionalität) wechselnde Stimmung, zeitweiliges Sichleerfühlen, unregelmäßige Arbeiten, Verbesserung der Stimmung gegen Abend, Leben in Phantasien oder Erinnerungen, Vergessen der Wirklichkeit über spannende Romane u. dgl.), welche ganz bestimmte Modifikationen des Traumlebens bedingen: vieles Träumen, starke, überwiegend dyskolistische, merklich nachwirkende Traumgefühle, häufige hypnagogische Gesichtshalluzinationen und vorwiegend visuelle, farbige Traumbilder, dagegen mangelhafte Erinnerung für den Trauminhalt und dessen Zusammenhang." Es werden auch Versuche gemacht, diese und weitere Zusammenhänge psychologisch zu erklären.

O. LIPMANN (Berlin)

679. LIPMANN, O., und KRONFELD, A., Über die Wirkung der Kola. Eine pharmakopsychologische Untersuchung. *Zeits. f. angew. Psychol.*, 1921, 18, 326-335.

Wie verhalten sich die Leistungen von 13 Vpp in einigen Tests, wenn diese Vpp 10 Minuten vorher 8 Kolatabletten eingenommen haben zu den Leistungen derselben Vpp ohne eine solche Kola-Wirkung? Beim Zahlendurchstreichtest, Zahlenazähltest, Obervorstellungstest, Analogietest und Farbenbenennungstest zeigt sich infolge des Kolagebrauchs eine Zeitverkürzung. Eine mit der Zeitverkürzung verbundene Verminderung der Leistungsqualität (Zunahme der Fehler) war nicht eindeutig festzustellen, wenn auch einige Teilergebnisse darauf hinzudeuten scheinen.

O. LIPMANN (Berlin)

680. STRAGNELL, G., The Dream in Russian Literature. *Psychoanalytic Rev.*, 1921, 8, 225-251.

The dream occupies a prominent position in Russian literature and its meaning is more clearly understood than in any other literature. Russian writers, because of the strict censorship, have made constant use of the symbol in expressing their political wish-fulfillments, and thus have become skilled in symbolic writing in general, and in the interpretation of dream material.

Examples of dreams are given from the works of Dostoevsky, Korolenko, Gogol, Pushkin, Tchernychevsky, Kuprin, and Turgenev. These examples show that the authors had an intuitive understanding of the dream as a wishfulfillment and of many of the Freudian mechanisms. The dreams in the works of Dostoevsky and the dreams of Vera in Tchernychevsky's "What's to Be Done" are discussed in some detail, for these show to best advantage the "power of the artist to run ahead of the men of science."

J. W. BRIDGES (Toronto)

681. HAVILAND, C. M., An Autobiography. *Psychoanalytic Rev.*, 1921, 8, 284-313.

The author presents an autobiography written by a young man of twenty-three while in one of the U. S. Training Camps, just before his departure for France. It is a very personal description of early childhood experiences and emotions, but fact is no doubt intermingled with phantasy and the whole thing represents a regression to infantile conditions, resulting from the emotional stress of anticipated warfare. The autobiography was revealed during the

course of psychoanalysis of the soldier (now a patient) after his return from France.

Both the autobiography and the author's comments upon it will be of interest to psychoanalysts. The patient's story of his life in a "Crystal sphere" is regarded by the author as a prenatal phantasy, the "Child presence" that guided him and directed him is the mother, and the "Strange tongues" are the vocalizations of infancy. Perhaps the most interesting part of the autobiography is the phantasy of the "Fairy kingdom" in which the Oedipus tragedy is enacted in all its details. The type of phantasy building illustrated by the autobiography is fraught with great danger to health and mental well being.

J. W. BRIDGES (Toronto)

682. SCHROEDER, T., Psychology of One Pantheist. *Psychoanalytic Rev.*, 1921, 8, 314-328.

The writer analyzes and interprets psychoanalytically the views of one Paul Blaudin Mnason, and his pantheistic identification with God. This self-apotheosis is explained as a compensatory wishfulfilling phantasy, a reaction against a feeling of inferiority. This feeling was based first upon organic inferiority, and later upon moral delinquency. The subject had a criminal career lasting until his thirty-sixth year. The feeling of guilty inferiority, as is usual in such cases, led also to the generalization of the iniquity in order to divert moral criticism. Thus arose the concept of original sin and degeneracy, and the compensating desire for perfection and Godhood.

The ecstatic exaltation of the subject is explained as a partly sublimated auto-erotism. The repression of heterosexual tendencies has resulted in a psychic erotomania which adds weight to the claim of Godship. The author believes that all transcendental experiences are, in psychologic essence, the same, namely *erotic ecstasy* usually not recognized for what it is by those who are its victims. The sexual passion of the pantheist has become dissociated from its original object and transferred to the *Universe*.

J. W. BRIDGES (Toronto)

683. STRATTON, G. M., The Control of Another Person by Obscure Signs. *Psychol. Rev.*, 1921, 28, 301-314.

An account of some tests made upon Eugen de Rubini, a Moravian mind reader whose feats resemble those of muscle reading

with the exception that direct contact is not necessary. Auditory cues were eliminated and found to be of little aid. Further tests seem to indicate that the feat is performed through the aid of obscure visual cues given unintentionally by the guide and caught in peripheral vision by the mind reader.

P. T. YOUNG (Illinois)

684. MACDONALD, A., Death-Psychology of Historical Personages. *Amer. Jour. of Psychol.*, 1921, 32, 552-556.

The last words of the average man are soon forgotten. Only in the case of distinguished persons is any record kept that indicates the mental condition at or just before death. The death-bed utterances of 794 distinguished persons in history are analyzed and tabulated according to the profession or occupation of the dying person, the manner of death, and the mental state of the individual.

G. J. RICH (Pittsburgh)

685. TILLMAN, E. K., The Psychoanalytic Theory from an Evolutionist's Viewpoint. *Psychoanalytic Rev.*, 1921, 8, 349-360.

The author attempts to show that the evolutionary and psychoanalytic explanations of human conduct are in agreement. He limits himself, however, to a consideration of only one subject, namely, "The etiology and deeper purposive meaning of the plasticity of the emotions."

Biologically the fundamental emotions are the active states or accompaniments of the very few instincts concerned with self-maintenance and reproduction. In the course of evolution these emotions change in *form* but not in *content*. That is to say there is no true evolution of emotions. They remain firmly anchored to the earliest instincts of life. Psychoanalysis has called attention to the remarkable plasticity of the emotional expression of the sexual instinct, while the emotion itself remains essentially the same. This plasticity is itself the means of maintaining the primordial instinct intact. Psychoanalysis is thus in accord with evolutionary theory, but it argues against the view that evolution is synonymous with progress, and thus leads back to Darwin's original conception as distinguished from that of Spencer.

J. W. BRIDGES (Toronto)

686. CREASY, H. M., Psychoanalysis and Its Relation to the Neuroses. *Psychoanalytic Rev.*, 1921, 8, 361-374.

This paper outlines some of the well-known fundamental principles and practices of psychoanalysis from a strictly Freudian

standpoint. The author emphasizes the value of psychoanalysis in directing the libido into channels that lead to achievement and the building of character.

J. W. BRIDGES (Toronto)

687. CORIAT, I. H., *Sex and Hunger*. *Psychoanalytic Rev.*, 1921, 8, 375-381.

The theory of the identity of the hunger libido and the sexual libido is supported by evidence from the following sources: Analysis of neurotic patients suffering from bulimia or "false mental hunger," analysis of dreams of eating, mythology, literature, primitive ceremonials, and symbolisms in everyday life. The expression of unsatisfied or repressed sexuality in hunger or hunger symbolism represents a regression to the asexualized libido of early life, and also a utilization of an erogenous zone (mouth) not banned by social convention.

J. W. BRIDGES (Toronto)

688. SCHMALHAUSEN, S. D., *Our Tainted Ethics*. *Psychoanalytic Rev.*, 1921, 8, 382-406.

The author discusses and analyzes four types of morality: the ethics of conventionality, the ethics of persecution, the ethics of loyalism, and the ethics of humanism. The first three types are based upon the need of approval. This approval (including self-approval) is earned by duplicity and pretence. Man is inherently theatrical and mock-heroic, and conceals his true nature (even from himself) behind the mask of accepted habit. On the other hand the supermorality of humanism is the honest ethics which we should strive to attain.

*Ethics of Conventionality*.—This type of morality prescribes the mode of behavior prerequisite to membership in a stratified society. It consists of inherited customs imposed upon the individual before he is old enough to question their validity. This mask of parasitic beliefs usually remains unquestioned, because the desire for self-approval and self-aggrandizement fosters the mock-heroic pose.

*Ethics of Persecution*.—Moral people are full of venom, which they humorously refer to as righteous indignation. They delight in the persecution of non-conformists because it gives them a feeling of superiority, because it affords a glorious opportunity for mock-heroics, because, savages at heart, they get a secret but intense pleasure in another's pain, and because their own repressed crimi-

nal desires are projected upon the culprit who like a scapegoat must make vicarious atonement.

*Ethics of Loyalty.*—Loyalty is based upon gregariousness and self-importance. Intense loyalties are caste-tainted, snobbish and hostile to truth. Loyalty is demoralizing when symbol is more dear than thought, and when the utility of skepticism is denied. The more passionate one's aversion or approval, the more irrational. A passionless pronouncement is always more accurate. A fanatic or prophet may have one grand idea for saving the race, but it is usually invalid.

*Ethics of Humanism.*—This super-moral attitude to life is represented by three types of thinkers, psychoanalysts, playwrights, and anthropologists. It denies the validity of antecedent morality. It regards the person of rigid morality as spiritually dead. It raises no question of superiority or inferiority. "The humanist will know that his primary task is the analysis of conventional morality in all its forms, the revelation of its life-denying elements, the illumination of its contradictions, its primitive origins, the futility of its taboos and inhibitions and pretences, the need of a creative morality promising liberation and expansion to the too long-suppressed human personality."

J. W. BRIDGES (Toronto)

689. HOUSE, S. D., Another Comedy of Errors. *Psychoanalytic Rev.*, 1921, 8, 407-416.

The writer reports a list of interesting errors made by his typist while she was typing his essays on "Education and Life" and "The Pulse of Modernity." The errors are presented either without comment or with only brief interpretative suggestions. The writer believes they are "A revelation of Freudian law beautifully at work in the un-self-conscious mind."

J. W. BRIDGES (Toronto)

## 9. NERVOUS AND MENTAL DISORDERS

690. FRANK, H., Über Funktionsprüfungen bei Gehirnverletzten. *Zeits. f. angew. Psychol.*, 19, 1921, 171-195.

Das Ziel der Arbeit besteht darin, durch Prüfung mit Hilfe der heute üblichen Testmethoden die Läsionszugehörigkeit eines Hirnverletzten eindeutig zu bestimmen. Die Prüfung erstreckte sich auf optische Auffassung, Rechenfähigkeit, Vorstellungsvermögen,

Aufmerksamkeit, Merkfähigkeit, Kombination, Konzentration und Intelligenz. Ein Teil der verwendeten Aufgaben erweist sich als brauchbar zur Feststellung von Okzipitaltangierungen. Es sind jedoch keine Aufgaben gefunden worden, die, ohne Okzipitalfunktionen zu betreffen, nur Frontal- oder Parietaltangierungen charakterisieren.

H. BOGEN (Berlin)

691. MOORE, T. V., *The Parataxes: A Study and Analysis of Certain Borderline Mental States*. *Psychoanalytic Rev.*, 1921, 8, 252-283.

There is at present no wholly satisfactory classification of mental diseases. Classification by mental functions is especially unsatisfactory, for diseases of the mind are never abnormalities of a part but always of the whole. In every mental disease the root of the trouble lies in a conflict between desire and its fulfillment, or between opposing trends of the personality. In psychiatry, treatment does not depend upon diagnosis as in medicine. An analysis of the patient's characteristic modes of reaction may be followed by treatment without ever raising the question as to whether the *tout ensemble* of his symptoms fits into this or that disease entity.

The fundamental tendency of the mind to adjust itself to pleasant and unpleasant situations is, by analogy with the taxes of the protozoa, termed *psychotaxis*. The tendency to seek pleasant emotions and feelings is termed *positive psychotaxis*; and the tendency to avoid the unpleasant ones, *negative psychotaxis*. *Psychotaxis* is a reflex mechanism usually quite unconscious and must of course be distinguished from voluntary and rational readjustment.

The negative psychotaxes are of most importance for psychiatry. The following are some of the chief forms: (1) Psychotaxes that present no solution for the unpleasant situation. These are depression and anxiety. (2) Psychotaxes that present some solution, however inadequate. Here are classified defense reaction, compensation, and sublimation.

These psychotaxes are common to all mankind, but if carried to excess they become abnormal. Abnormal psychotaxes are called parataxes. The parataxes may be regarded as the elements of the psychoses and psychoneuroses. The parataxes of depression and anxiety are specially considered and examples presented. The former is a type of reaction to calamity due in large part to the craving for sympathy and the inhibition of association, but also

no doubt determined by heredity and physical condition; the latter, which consists mainly in the tendency to consider over and over again unpleasant possibilities, is the result of an apparently irreconcilable conflict between incompatible desires, such as the craving for sensuous pleasure and the desire to live up to the standards of cultural morality. The therapeutic task is to find a solution for this conflict that will remove the anxiety without sacrificing the moral law.

J. W. BRIDGES (Toronto)

692. WHITE, W. A., Some Considerations Bearing on the Diagnosis and Treatment of Dementia Precox. *Psychoanalytic Rev.*, 1921, 8, 417-422.

The fundamental underlying mechanism in dementia precox is regression. The symptoms are all regressive in type or are efforts to escape from the regression (transitory manic states). The malignancy of the regression in dementia precox is dependent upon two factors: first, the depth of the regression measured from the point of view of the individual's personal psychological history, and second, the inclusion in the regression process of archaic, that is phylogenetic, material. These factors explain both the patient's lack of insight into his condition and the alien character of his symptoms; for the latter hark back to forgotten periods in the life of the individual or the race.

This profound defect in biological adjustment is likely to resist any known therapeutic method. Occupational therapy, for example, does not cure these patients, but it represents an important adjuvant. It leads to the individualizing of the patient and it may check the regression by transferring his available interest to outside realities.

J. W. BRIDGES (Toronto)

#### 10. INDIVIDUAL, RACIAL AND SOCIAL PSYCHOLOGY

693. ROEMER, Prüfung von Kriminalanwärtern. *Zeits. f. angew. Psychol.*, 1921, 18, 111-125.

Kurzer Bericht über eine Eignungsprüfung für den Kriminaldienst. Es ging eine allgemeine Prüfung vorauf, in der ein Diktat und ein Aufsatz zu schreiben waren. Der Inhalt der Arbeiten bewegte sich im Erlebniskreise des künftigen Berufs. Der psychotechnische Teil der Prüfung erstreckte sich auf Beobachtungsgabe,

"Gedächtnis für Komplexe Tatbestände," allgemeine Merkfähigkeit, Kombinationsgabe, Konzentrationsfähigkeit und moralische Orientierung. Methode und Tests waren im allgemeinen den üblichen Begabten prüfungen nachgebildet.

H. BOGEN (Berlin)

694. LAMBERT, A., Attitude of the Physician to the Health Center.  
*Nation's Health*, 1921, 3, 637-641.

Increased scientific knowledge in causation and prevention of disease has outrun scientific development of therapeutics, temporarily injuring medical service. The test of ultimate values, however, lies in the efficacy of present working hypotheses. Applied art and theory are reciprocal and must be correlated to serve as a mutual check. Science is the search for and development of truth which ceaselessly expands. Progress is change. Neither esoteric aloofness nor inflexible resistance to change will serve to stay the change that means progress.

The attitude of the profession towards health centers cannot without injury to itself always obstruct and oppose the desire and plans of the community for increased and better medical service. The continued passage of resolutions against all constructive plans offered will in the end result in an angry response by legislative action and the increased licensing of new pathies and cults. The most practical answer to all unrest and demand for improved medical service is for the medical profession itself to formulate a constructive plan of better service given through concerted action by county medical societies whereby adequate hospital facilities can be furnished for the medical, surgical and nursing care of the sick and which will give hospital opportunities to all physicians of each county.

M. E. GALLAGHER (Pennsylvania)

695. ARLITT, A. H., On the Need for Caution in Establishing Race Norms. *J. of Applied Psychol.*, 1921, 5, 179-183.

Three hundred forty-three children in the primary grades of a school district were tested by the Stanford Revision. 191 were children of native-born white parents, 87 were Italians (all spoke English without difficulty), 71 were negroes. The separation into groups by occupation followed Taussig's divisions. The median I.Q. for the native white group was 106.5, for the Italian group 85, for the negro group 83.4. This disparity is great, but 37 per

cent. of the native-born white came from families of superior and very superior social status whereas 93 per cent. of the negro and 90 per cent. of the Italian group came from families of inferior and very inferior social status. The writer concludes that: (1) There is a difference in the distribution of intelligence in negro and Italian groups as compared with groups of children of native-born white parents which seems to be due to race alone. (2) There is a marked difference in the distribution of intelligence in groups of children of the same race but different social status. This disparity seems to be greater than the disparity between children of the same social status but different race. (3) Race norms which do not take the social status factor into account are apt to be to that extent invalid.

E. MULHALL ACHILLES (Columbia)

696. BURTT, H. E., The Inspiration-Expiration Ratio During Truth and Falsehood. *J. of Exper. Psychol.*, 1921, 4, 1-23.

Three kinds of studies have been made in the attempt to discover the difference in attitude between truth and falsehood: association reactions, systolic blood pressure, and the ratio of inspiration time to expiration time in breathing. With an improved technique the author tested the value of the second and third of these indications, with especial attention to the third. Four series of experiments were carried out, in each of which the subject lied in a certain number of cases, and told the truth in others. Many of the tests gave inconclusive results, but some of them yielded evidence that seemed to be fairly reliable. More accurate diagnosis was obtained by using the evidence from blood pressure and breathing combined than from either separately.

J. CARLETON BELL (New York University)

697. BURTT, H. E., Further Technique for Inspiration-Expiration Ratios. *J. of Exper. Psychol.*, 1921, 4, 106-110.

The article describes accessory apparatus for facilitating the reading of inspiration-expiration ratios from the pneumograph. The apparatus saves much time in reading records, and increases the reliability of the results.

J. CARLETON BELL (New York University)

698. WOLFE, A. B., The Motivation of Radicalism. *Psychol. Rev.*, 1921, 28, 280-300.

Radicalism arises through the blocking of some desire and shows itself in an attempt to change the environment. When an indi-

vidual is confronted with the necessity of readjusting himself to his environment he may either modify his desires and accept the situation or he may make an attack upon the environment.

Readjustment may take place through one of three processes: (1) Repression, which is not likely to produce radical attitudes. (2) Transference and substitution. The individual may engage in some radical movement which symbolically represents the repressed desire. (3) Reinforcement, through attention to the obstacles. This is the center of radical motivation and it gives the drive and the consistency to radical movements.

It should be noted also that there are positive instincts which motivate innovators.

P. T. YOUNG (Illinois)

## II. MENTAL DEVELOPMENT IN MAN

699. NORCROSS, W. H., Experiments on the Transfer of Training.  
*J. of Comparative Psychol.*, 1921, 1, 317-363.

Norcross's paper, although it is not written with that measure of elaborateness which would insure absolute clarity in regard to all points of his technique, reports one of the neatest and the most systematic investigations to be found in the literature. The experimental results are presented in 16 tables and 23 exceedingly neat plates of curves. The bibliography contains 34 references to the experimental literature on the transfer of training. The apparatus was the Burroughs electrically driven adding machine, abetted by the Dunlap addition sheets of four-place numbers and a split-seconds stop-watch. The experiment consisted of five parts, such as practice exercises in *simple listing* of numbers (that is, the reading and putting of numbers into the machine), *observation* of other persons manipulating the machine and listing numbers, *auditory listing*, *number reading*, and the mere using of the machine itself. 23 persons served as reagents. A constant amount of listing at each sitting was done, and the diminution of the time required for the tasks was recorded. The curves are based on the time records (although each plate carries also an error curve, the accuracy data having been submitted to an arbitrary scale). Both right and left hands were practiced, now one, now the other, and the opposite hand remained idle during the practice of the active hand; the first practice series was initiated by preliminary tests of each hand; the subsequent practice series were seriated, one from the others,

by semi-final and final tests of each hand. The numbers placed in the machine were four-place numbers, 45 to a strip (one-half of the whole sheet). From 20 to 24 days' practice was obtained with practically all subjects, and this much practice amounted in most cases to about 9 hours' practice for each person.

The results, briefly, were as follows: (1) The idle hand always improved in skill during the practice of the other hand, and if the order of practice was left, right, right left, the left hand's improvement was greatest; and if the order was reversed the right's improvement was greatest. (2) Auditory listing, alone, led to the greatest improvement in skill. (3) Practice in reading the numbers was also effective in improving both hands. (4) The smallest improvement resulted from just the mere manipulation of the adding machine. The investigator has offered explanations of this bilateral transfer; he suggests such causes as emotional and attitudinal orientation, the building up of such general habits as those of concentrated effort and resistance to distractions, and the gradually increasing resistances to fatigue. That a motor impulse, in a higher center, for one hand, might have transferred itself or been relayed to the other hand, the investigator questions, mainly for the reason that transfer effects were least observable when the practice consisted solely of practice in the manipulation of the fingers in working the machine;—in fact, practice in the mere reading of numbers was more effective in giving rise to transfer effects than was manual practice on the machine.

The paper closes with an analysis of the kinds of errors that occurred during practice and the causes of these errors; and an attempt is made to correlate speed results with accuracy results. As to the causes of errors, etc., the author cites general objective observations made by the experimenter of his reagents. The reader may be inclined to doubt that an experimenter can manipulate stop-watch accurately and attend to several other matters of apparatus and technique and still accurately at the moment jot down objective observations concerning his reagent. That *inferential*, objective, methods solely can determine with accuracy what is the subject's mental behavior and what are the subject's learning methods is open to serious question.

H. R. CROSLAND (Oregon)

700. BOGEN, H., Zur Entwicklung der grammatisch-logischen Funktionen. Statistische Ergebnisse aus einer Experi-

mentaluntersuchung an einem Bindeworttest. *Zeits. f. angew. Psychol.*, 1921, 19, 39-99.

Etwa 3000 Versuchspersonen im Alter von 9-25 Jahren füllten einen Lükkenkontext aus, in dem die Konjunktionen zu ergänzen waren. Bestimmten Kategorien der Gedankenverknüpfung kommt ein bestimmter Grad psychologischer Schwierigkeit zu. Die Funktionen kausalen, temporalen und kopulativen Charakters werden besser beherrscht als die der Steigerung und des Kontrasts. Die Mädchen zeigen sich den Knaben gegenüber bis zum 14. Jahre qualitativ und quantitativ überlegen. Später tritt der umgekehrte Sachverhalt in Erscheinung. Der grösste Altersfortschritt liegt bei den Knaben zwischen dem 9.-10. Lebensjahr, bei den Mädchen zwischen dem 10.-12. Die Streuung bestätigt die grössere Intervariabilität des männlichen Geschlechts. Ergebnisse des Konstanzversuchs sprechen für die Zuverlässigkeit des Tests.

H. BOGEN (Berlin)

701. BARTSCH, K., Binet-Rossolimo. *Zeits. f. angew. Psychol.*, 1921, 18, 111-125.

B. prüfte schwachsinnige Kinder, die zur Aufnahme in eine Hilfsschule angemeldet waren und bisher nur nach der Binet-Simon Skala beurteilt wurden, gleichzeitig nach der Methode zur Gewinnung psychologischer Profile von Rossolimo. Die R. Methode ist ebenso gut verwendbar, wie die B.S. Skala. Sie hat dieser gegenüber noch den Vorzug, unmittelbar Schlüsse auf die Art der Defekte zuzulassen.

H. BOGEN (Berlin)

702. SCHÜSSLER, H., Die Entwicklung des schlussfolgernden Denkens bei Kindern und Jugendlichen. *Zeits. f. angew. Psychol.*, 1920, 17, 333-348.

Untersuchungen mit 3 verschieden schwierigen Schlussfiguren. Die Entwicklung zeigt bei Personen männlichen Geschlechts einen ununterbrochenen Aufstieg bis zum 13. Lebensjahr, dann ein allmähliches Absinken bis zum 16. und darauf steilen Anstieg bis zum 20. Jahr. Bei weiblichen Personen verschieben sich die Grenzen auf das 15. resp. 17. Lebensjahr. Die Hauptentwicklungsfortschritte liegen zwischen dem 8.-9., 11.-12. und 16.-17. Jahr. Bis zum 15. Jahr sind die Mädchen überlegen. Sie zeigen ferner im schulpflichtigen Alter Überlegenheit im anschaulichen Denken. Die Schlussfiguren sind als Intelligenztests verwendbar.

H. BOGEN (Berlin)

703. BODEN, F., Die Fahrlässigkeit (carelessness) als psychologisches Problem. *Zeits. f. angew. Psychol.*, 1920, 17, 313-333.

Die Behandlung in der Rechtspraxis lässt den Einzelnen im Falle des Verschuldens nicht für Fahrlässigkeit, sondern für Unfähigkeit, also nicht für einen Willens- sondern für einen Intelligenzmangel haften. Darin ist eine Unbilligkeit zu erblicken. Auf Grund der Forschungsergebnisse der Aufmerksamkeits-, Denk- und Willenspsychologie ergibt sich, dass die Nachteilsandrohung dort einen Sinn hat, wo sie dazu dient, ein den Willen zum richtigen Handeln entgegenstehendes Interesse zu überwinden, oder wo ein solches Interesse entweder nicht vorhanden oder ungewöhnlich schwach ist. Die Rechtspraxis hat somit in erster Linie auf den unmittelbaren Nachweis des Willensmangels Bedacht zu nehmen. In intellektueller Beziehung ist die Verfügbarkeit des die Interessenrichtung bestimmenden potentiellen Wissens mit zu beachten.

H. BOGEN (Berlin)

704. KUENBURG, M. v., Über Abstraktionsfähigkeit und die Entstehung von Relationen beim vorschulpflichtigen Kinde. *Zeits. f. angew. Psychol.*, 1920, 17, 270-312.

Der Hauptversuch will zunächst die Frage nach dem ersten Auftreten und der weiteren Entwicklung der vollständigen Abstraktionsleistung beantworten. Das erste Auftreten liegt etwa im 3. Lebensjahr; zwischen dem 4.-5. Lebensjahr zeigen beide Geschlechter einen relativ raschen Altersfortschritt, dem dann wieder ein Absinken folgt. Geschlechtsdifferenzen scheinen in verschiedener Struktur des Gedächtnissesihren Grund zu haben. Der Ergänzungsversuch an Kindern im Alter von 1; 4-3; 0 ist eine Analyse der Teilkomponenten der Abstraktion. Der Unterschied der Abstraktion von ihren Vorstufen liegt in dem Wirksamwerden einer aktiven zielbewussten Tätigkeit, der Erkenntnis der Relationen als von den Sinnendingen losgelöste Tätigkeit und in dem Aktualisieren des Aufgabe; bewusstseins.

H. BOGEN (Berlin)

705. MUTH, G. F., Zierversuche mit Kindern. 4. Über eine sehr merkwürdige Linie in den zierkünstlerischen Arbeiten des Kindes. *Zeits. f. angew. Psychol.*, 1920, 17, 259-269.

Aufgabe war, einen Teller zu zeichnen und zu verzieren. Verf. betrachtet die Entwicklung einer gewissen einfachen Linie, die

gleichmässig zwischen äusserem und innerem Tellerrand verläuft und in sich zurückkehrt. Sie tritt schon vom 3. Lebensjahre an auf und erhält sich bis in die höchsten Stufen unter Bewegungsänderungen, Durchbrechungen und Inhalts abwandlungen. So lässt sich auch in der ornamentalen Entwicklung des Kindes eine innerlich begründete Folgerichtigkeit konstatieren. (Das Material ist an mehr als 2000 Kindern im Alter von 3-14 Jahren gewonnen.)

H. BOGEN (Berlin)

706. GILBRETH, F. B., and GILBRETH, L. M., The Work of Fatigue Elimination in College. *Nation's Health*, 1921, 3, 675-677.

Pioneer work in the field of Fatigue Elimination was initiated by Professor George F. Blessing at Swarthmore College, October 1917. Fatigue Elimination Day was observed at Swarthmore College on December 3, 1917. The Fatigue Elimination exhibition proved several things: that students will take an interest in an outside activity that connects their college life with industrial life as readily as in one that has very little practical or educational value. Such efforts have a tendency to vitalize the work of the class room, and many valuable lessons could be brought into the college life from industry by this method. It causes the student to think more seriously for his college education, as a preparation for life, and gives him something besides athletics, dramatics and social affairs to discuss during his hours out of the class room. Business houses are glad to coöperate in such work. Fatigue Elimination Day now has a permanent place on the Swarthmore College calendar. It is a full-size college function! Efficiency has acquired new interest and a broader definition.

M. E. GALLAGHER (Pennsylvania)

707. RUCH, G. M., A Preliminary Study of the Correlations Between Estimates of Volitional Traits and the Results from the Downey 'Will Profile.' *J. of Applied Psychol.*, 1921, 5, 159-162.

There are conclusions which are not in accord with Dr. Downey's results. The number of subjects is small, however. The writer gives his results in the hope that they may be interest to others and serve to aid the efforts in a pioneer and inestimably valuable field of service.

E. MULHALL ACHILLES (Columbia)

708. TERMAN, L. M. and FENTON, C., Preliminary Report on a Gifted Juvenile Author. *J. of Applied Psychol.*, 1921, 5, 163-178.

This is a report of Betty Ford who six weeks before her eighth birthday tested 14-10 by the Stanford revision, I.Q. 188. By a non-verbal scale the I.Q. was 175. Her vocabulary was approximately 13,000 words, not far from the median for Stanford University Freshmen. On the Trabue Completion Tests B and C her score (175) equalled the median for third or fourth year high-school pupils. She is at her best in vocabulary, information, language, completion and memory and at her worst in tests involving arithmetical processes. When 8 years old she had read approximately 700 books, including many works by Shakespeare, Burns, Longfellow, Scott, Thackeray, Dickens, Kipling, and George Eliot. By the age of eight Betty had written more than 100 poems and more than 75 stories. Except for slight myopia Betty has no physical defects. She sleeps ten to eleven hours a day. Her ambition is to be a physician and a writer.

E. MULHALL ACHILLES (Columbia)

709. Infant Care, Children's Bureau, U. S. Dept. of Labor, *Care of Children Series 2, Bureau Publication 8 (Revised)*, 1921.  
112 pages.

This pamphlet is a revised edition of the bulletin, Infant Care, by Mrs. Max West, first published in 1914. It includes a consideration of almost everything which can affect the welfare of the infant—birth registration, the home, the nursery, its clothing, its bath, its food, etc. Although the bulletin deals essentially with the physical welfare of the infant, and as much is of interest, special sections are of particular interest to the psychologist who concerns himself at all with the growth and development of the infant.

A section is devoted to the Growth of the Infant, including subsections on teeth and feet. Another section deals with the Development of the Normal Baby. The "leading characteristics of a normal healthy baby" are given, with the warning that "the mother may assume the lack of these conditions to show that, temporarily or otherwise, the baby is not in perfect health." These include such general characteristics as "good appetite, absence of vomiting and regurgitation, contented expression," etc., and a few more definite signs of development as "the recognition of objects at 6 to 8 weeks, ability to sit erect at 7 or 8 months," etc. A few short paragraphs on Playing with the Baby, Toys and Superstitions can be read with profit.

Of special interest is a section on Habits, Training and Discipline. "Habits," it is stated, "are the results of repeated action. The wise mother strives to start the baby right. A properly trained baby is not allowed to learn bad habits which must be unlearned later at great cost of time and patience." Separate paragraphs deal with different aspects of these topics. The one on Systematic Care explains why the first essential good habit is that of regularity. Training the Bowels explains the need for regular bowel movements and presents one method of training. Similar to this paragraph is one on Training the Bladder. Under the title Bad Habits is discussed Crying, with the significant conclusion that when the infant cries "simply because he has learned from experience that this brings him what he wants, it is one of the worst habits he can learn, and which takes all the strength of the mothers to break." The "extremely bad habit of sucking a rubber teat or other article" is discussed under Pacifiers, and methods of ending thumb and finger sucking under that heading. The causes and cure of bed-wetting and masturbation also receive consideration.

In a short paragraph on Punishment it is stated that "harsh punishment has no place in the proper upbringing of the baby. A child who is often punished," it is said, "may be so dominated by the fear of his parents that, the natural expression of his vital interest being denied, he becomes sullen and morose as he grows older."

The problem of training is summed up in the statement that "it must not be forgotten that infancy is a period of education often of greater consequence than any other two years of life. Not only are all the organs and functions given their primary training but the faculties of the mind receive those initial impulses that determine very largely their direction and efficiency through life. . . . If the initial stimuli are sent in orderly fashion, the habits thus established and also the tendency to form such habits will persist through life."

The bulletin from this point is devoted altogether to the physical care of the infant and the mother. A paragraph on Growth gives the norms of weight accretion during the first year of life. Separate attention is given to diet, with special reference to the artificially fed baby.

Under the headings of Common Disorders and Diseases of Infancy and Communicable Diseases are presented, in simple terms, the symptoms and treatment of the minor and major ail-

ments of infancy, including ailments as relatively unimportant as hiccoughs and diseases as serious in their effect upon the growth and development of the infant as syphilis. The final chapter is devoted to Food Recipes.

M. S. VITELES (Pennsylvania)

710. NACCARATI, S., The Morphologic Aspect of Intelligence.  
*Arch. of Psychol.*, 1921, 45, pp. 44.

The author is interested in the problem of the correlation between bodily and mental traits. He gives a survey of the literature on the subject. His research was carried out on college and university students of the white race. The tests used for measuring intelligence were the "Alpha Army Test," the "Otis Intelligence Test" and the "Thorndike Intelligence Examination Tests." The possible range for Army Alpha is 0 to 212 and for Otis 0 to 230. The scores of the subjects tested ranged from 76 to 176 for Army Alpha and 121 to 220 for Otis. The ages of the group of college men varied from 17 to 22 years. The anthropometric measures of this group were taken at the gymnasium in metric-system units. The measurements made and derived were height, weight, ratio of height and weight, length of limbs, volume of trunk, lung capacity. Besides the college boys two other groups of 50 and 94 students in Summer Session of both sexes whose ages in many cases were over 25, were subjects.

Some of the conclusions may be summarized as follows: Intelligence can not be correlated with a simple physical trait such as height or weight. A basis for correlation must be found in a compound physical trait made up of several anthropometric traits.

The physical constitution of the individual when the development of the extremities and that of the trunk are reciprocally considered and compared is what is known as morphologic type. 'Morphologic Index' is the ratio of the length of one upper and one lower limb to the volume of the trunk. The morphologic type is the outcome of hereditary and accidental factors. After the age of 25 external factors cause changes by which the morphologic type may be modified. The index and the ratio of height and weight taken in adults should be referred to the age of 25 years.

A positive correlation, .228, P.E. .044 (average of 221 students), was found between intelligence and the ratio of height and weight. (The correlation between the ratio of height and weight and the morphologic index is .7 so that the ratio of height and weight is

an indicator of the morphologic type.) No correlation was found between height and intelligence, nor between lung capacity and intelligence. There was a negative correlation between weight and intelligence.

E. MULHALL ACHILLES (Columbia)

711. HANSEN, C. F. and REAM, M. J. The Predictive Value of Short Intelligence Tests. *J. of Applied Psychol.*, 1921, 5, 184-186.

An investigation was made with an intelligence test devised by the Bureau of Personal Research of the Carnegie Institute of Technology. The aim was to determine the effort of greatly shortening the time of the test upon: (1) standing as determined by the full time test and (2) correlation with a practical criterion.

The test used was a modification of the Army Alpha, known as Personnel Bureau Test VI. Six parts of the Army Alpha were "scrambled" to make a continuous test, the oral directions and common-sense questions were omitted, the remaining items were arranged so that they were progressively harder as the test advanced. Two groups were tested; a record of the amount done at the end of 5, 10, 15, 20 and 25 minutes were made. The papers furnished five scores—score for the first five minutes, the first ten, first fifteen, first twenty minutes and the total score on the complete test of twenty-five minutes. The results show that an intelligence test like the Bureau Personnel Test VI can be considerably shortened with practically no loss of reliability. The partial scores were also correlated with grades obtained in school courses. For practical purposes in predicting school success, the fifteen-minute test was just as satisfactory and reliable as the longer test.

E. MULHALL ACHILLES (Columbia)

712. MOORE, H. T. and GILLILAND, A. R., The Measurement of Aggressiveness. *J. of Applied Psychol.*, 1921, 5, 97-118.

The term aggressiveness is used synonymously with personal force, initiative, assurance. The writers were in search of a group of several significant tests which would offer "an aggressiveness profile." The tests used may be divided into three groups—(1) Eye control in personal interview, (2) Distractions—by staring, by electric shock, by snake, (3) Word association tests. In the first, eye control, the subject was required to perform a difficult series of mental additions while constantly returning the fixed

gaze of the instructor who faced him. The purpose of the distraction tests was to determine how far the ability to resist a type of distraction involving a certain element of fear was related to the possession or lack of aggressiveness. The word associations were given to see whether the study of responses to selected words would be reliable data for the differentiation of persons as aggressive or non-aggressive. The stimuli were ENTERPRISE, SUCCESS, DANGER, DEATH, OPPONENT, COMPANY.

The Faculty of Dartmouth College rated a class of 89 men on various traits including aggressiveness. The highest and lowest 15 per cent. in the trait of aggressiveness made two groups of 13 men each. These 26 students were given the above tests.

The method of scoring aggressiveness on the basis of these tests was to make deductions from 100 points for each failure of a subject to meet satisfactorily the requirements. In the interview test 5 points were deducted for every movement up to 10, maximum deduction 50; in the staring distraction record 2 points were deducted for each second of time increase in excess of 3 seconds above his normal adding time, maximum deduction 10; for the shock distraction 2 points were deducted for every second of time increase in excess of 5 seconds, maximum deduction 10; for the snake distraction test 1 point was deducted for each second of time increase in excess of 7 seconds, maximum deduction 5. In the word association test 2 points were deducted for each negative response to enterprise, success, or company and for each vivid personal type of response to death or danger—one point was deducted for each colorless or doubtful response to the first three named words, maximum deduction 10; for time of response 1 point deducted for every fifth of a second in excess of two seconds, maximum deduction 15 points. The total score in aggressiveness was obtained by totaling deductions and subtracting from 100. The thirteen men rated most aggressive by the Faculty had scores varying from 100 to 83, average 93. The thirteen men rated least aggressive had scores 88 to 35, average 58.8. The authors believe that the test approximates a true measurement of aggressiveness more nearly than does the Army Alpha examination approximate the measurement of intelligence.

E. MULHALL ACHILLES (Columbia)

713. WALLIN, J. E. W., The Results of Retests by Means of the Binet Scale. *J. of Educ. Psychol.*, 1921, 12, 392-400.

This is a statistical report of 136 retested cases and also a

detailed report of 20 special cases. The average differences in I.Q. range from 7 to 14 points according to the test used (1908 scale, 1911 scale and Stanford Revision). Changes in the I.Q. in certain of the special cases are so great that Wallin "counsels caution in the matter of the exclusion of assumed hopeless defectives from the public schools."

The author is interested in differences in score when the same group of children were tested on the same day with the 1911 scale and the Stanford scale. (Average difference .66 year.) He expresses the need for the validation of Stanford norms on a large number of unselected children from various sections of the country. It is his opinion that most of the Stanford age norms are too high, thus exaggerating the subject's deficiency.

A. J. POFFENBERGER (Columbia)

714. TERMAN, L. M., Mental Growth and the I.Q. *J. of Educ. Psychol.*, 1921, 12, 325-341 and 401-407.

Professor Terman makes a detailed and searching examination of four recent reports tending to cast suspicion upon the validity of the I.Q. (Studies by Doll, Wallin, Mateer and Freeman.) He attacks most vigorously the findings of Doll that the growth curves and age of mental maturity differ according to the final mental age attained. For example, the lower the final mental age the earlier growth ceases and the greater the tendency for the I.Q. to fall; for final mental age above normal the tendency is in the opposite direction. Terman's criticisms are, briefly, insufficient examination of the raw data and the failure to apply adequate statistical treatment. Correcting for these deficiencies, Terman uses the same data to reverse the conclusions of Doll.

Terman shows that Wallin's objection to the I.Q. arises from the discrepancy between a classification according to I.Q. and according to non-intelligence factors such as pedagogical, medical and social data, the latter classification not being properly checked and controlled.

The cases reported by Mateer are just the sort where the I.Q. is thought to fluctuate most widely, namely psychopathic children.

Freeman's report has to do with certain discrepancies between the results of Binet tests and certain group tests. The greater overlapping of mental ages in the later years characteristic of Binet tests does not show in the Army Alpha and Otis tests. The difference is at least in part due to the difference in the nature of

the test material in the two cases. Only further work will demonstrate which represents more adequately the nature of mental growth.

A. T. POFFENBERGER (Columbia)

715. POUILL, L. E., Constancy of the I.Q. in Mental Defectives According to the Stanford Revision of Binet Tests. *J. of Educ. Psychol.*, 1921, 12, 323, 324.

One hundred and twenty-six cases varying widely in chronological age and in I.Q. were retested, the average change being 1.2 points of I.Q. It is concluded that "mental defectives are not more variable than normal subjects." The author points out the injustice, however, of disposing of "suspicious" cases on the basis of one test, since some variations from test to test are large enough to change the classification of a case. Truer evaluations are obtained from composites of Stanford Binet, non-language and performance scales.

A. T. POFFENBERGER (Columbia)

716. RUGG, H, and COLLTON, C., Constancy of the Stanford-Binet I.Q. as Shown by Retests. *J. of Educ. Psychol.*, 1921, 12, 315-323.

The authors summarize and interpret data concerning the constancy of the I.Q. taken from six published reports and from studies made in the Lincoln School of Teachers College, in all 1,487 cases. Three criteria of constancy are employed: (1) Average difference between initial and successive tests. (2) The limits of the middle fifty per cent. of the differences and (3) The coefficients of correlation between the successive tests. With the exception of one report where there is "great doubt of the validity of the examining," these studies "tend to confirm Terman in his 1917 conclusions and to give much confidence in the constancy of the I.Q. as measured by the Stanford Revision of the Binet-Simon scale." The data are analyzed for the relation between change in I.Q. and age and intelligence of the pupils, the conclusion being that differences in retest will be approximately the same irrespective of the age and intelligence of the pupils.

A. T. POFFENBERGER (Columbia)

717. TERRY, P. W., The Reading Problem in Arithmetic. *J. of Educ. Psychol.*, 1921, 12, 365-377.

This is a brief survey of an investigation reported in full in

the *Univ. of Chicago Educ. Mono.* No. 18. The author approaches the problem of how children learn to read numerals by examining the methods used by adults in reading arithmetical problems containing numerals. The data consisted of introspective reports, time and quantity records and photographic records of eye movements. In the first reading of a problem there may be partial reading of the digits or complete reading of them. From the point of view of economy of effort, the partial method is the more efficient, as fewer pauses of the eyes are required. The gain in this partial first reading of the problem was not necessarily lost in later reading as there seemed no direct relation between type of first and later readings of the problem.

A. T. POFFENBERGER (Columbia)

718. WAPLES, D., An Approach to the Synthetic Study of Interest in Education. *J. of Educ. Psychol.*, 1920, 11, 301-315, 369-384 and 445-458.

This is a study, in five chapters, of the problem of interest in its relation to education. The introductory chapter contains a classification of the bibliography of the literature under three heads, (1) Introspective, (2) Analytic and Descriptive and (3) Statistical. Three studies included under the last head are briefly reviewed. The contents of the other chapters may be inferred from their titles which are as follows: The Value of Interest, Development of Instinctive Interest, Social Modification of Interest and Social Expression of Interest.

A. T. POFFENBERGER (Columbia)

719. WOOD, B. D. and BELL, J. C., Solution of Problems in Geometry. *J. of Educ. Psychol.*, 1920, 11, 316-326.

The purpose of this study is to discover the extent to which visualization enters into the solution of problems in geometry, to determine the precise manner in which it functions, and to ascertain what other differences there are between good and poor students in geometry. Tests were made upon six good and five poor students. The authors conclude that although there was a difference in the quality of visual imagery in favor of the good group, this difference was less than in any of the other factors studied, e.g., excellence in memory (immediate recall), in verbal expression and absence of motor manifestations.

A. T. POFFENBERGER (Columbia)

729. THORNDIKE, E. L., The Correlation Between Interests and Abilities in College Courses. *Psychol. Rev.*, 1921, 28, 374-376.

Thorndike's note upon the correlation between the interests and abilities of college students is based upon data taken from a recent study of Bridges.

P. T. YOUNG (Illinois)

721. CHAPMAN, J. C., Judgments of Relative Values. *J. of Educ. Psychol.*, 1920, 11, 385-397.

Three scales of statements were devised to test the capacity for judging relative values, namely, (1) Reasons for going to high school. (2) Reasons for saving money. (3) Reasons for reading good literature. School grades 6, 7 and 8 were tested with these scales. In grades 6 and 7 the capacity for judging relative values is represented by a coefficient of correlation of plus .36, in grade 8 by a coefficient of correlation of plus .58. This grade difference is significant and is probably due to a number of contributing factors. However, in all grades tested the power to judge relative values seems low. For example, in grades 6 and 7, twenty-two per cent. of the ratings were no better than chance arrangements, and in grade 8 there were eight per cent. of such ratings. The writer suggests two interpretations of these results; either that they are due to present-day dogmatic methods of teaching, or that they simply represent the activities of mechanisms which develop only with age, and at the age of the grades tested are relatively undeveloped.

A. T. POFFENBERGER (Columbia)

722. LINDSAY, E. E., Personal Judgments. *J. of Educ. Psychol.*, 1921, 12, 413-415.

This is a comparison of various judgments of native capacity with its measurement by Binet-Simon tests and by school examination. The judges were graduate students and professors. The children judged were 12 girls and 7 boys in a tenth-grade history class. The I.Q. correlated highest with the examination. The composite judgments of five judges correlated plus .52 with I.Q. The highest individual coefficient of correlation with I.Q. was also plus .52. The author concludes that teachers' estimates of native capacity are significant but to no marked degree; that training and experience as a teacher have little to do with making a good judge; that indi-

vidual judges differ widely in their reactions; and that the judgment is colored by other factors than native ability.

A. T. POFFENBERGER (Columbia)

723. FRANZEN, R. and KNIGHT, F. B., Criteria to Employ in Choice of Tests. *J. of Educ. Psychol.*, 1921, 12, 408-412.

In the choice of tests for school purposes distinctly second place should be given to such factors as geographical preferences, degree to which a test is advertised, prestige of the author, the price of the test, the time taken to give it and convenience in scoring. On the other hand, "we should insist upon the use of tests which can be proven to test what they purport to measure, which are reliable and objective, which are scaled, and which have well-defined norms based on sufficient material. If, in addition, we are able to select tests which interest the children, are applicable to all grades, distinguish between failures and correlate highly with intelligence at their maximum, we will be able to manipulate our results in such a manner as to gain additional benefits."

A. T. POFFENBERGER (Columbia)

724. GATES, A. I., An Experimental and Statistical Study of Reading and Reading Tests. *J. of Educ. Psychol.*, 1921, 12, 303-314, 378-391, and 445-464.

This report contains a wealth of valuable material for all who are interested in the reading problem and who use reading tests. An extensive survey of 12 different kinds of reading tests on a large number of cases covering a wide range of school grade form the basis for answering two questions: (1) What is the validity of the concept of general reading ability? (2) What do the numerous reading scales test and how well do they do it?

The author starts with the assumption that general reading ability is a reality, but not a single capacity. It is rather a composite of many functions. The functions to be included in this composite are determined in the first instance by competent judges and then checked by experiment. The degree of correlation of separate reading test scores with a composite score obtained from a variety of tests and with each other justifies the concept of general reading ability. The various tests of reading rate and comprehension are studied in detail, the defects and advantages of each being noted. Rate of reading and degree of comprehension are found to be very closely correlated. ( $r =$  plus .84.) "Read-

ing is a function which can be profitably measured and in which rate and comprehension can be differentiated, although most of our tests do not do so. The present tests are useful but not perfect instruments. We need tests constructed with such care that the numerous defects found in the tests now in existence shall be avoided."

A. T. POFFENBERGER (Columbia)

725. SKAGGS, E. B., A Comparison of Results Obtained by the Terman Binet Tests and the Healy Picture Completion Test. *J. of Educ. Psychol.*, 1920, 11, 418-420.

The detailed records of 65 cases tested by means of these two measures are presented in a table. When the 65 cases are divided roughly into three groups, Normal, Superior and Inferior, 44 per cent. fall in the same class by both tests, 29 per cent. receive opposite ratings and 26 per cent. shift to the neighboring class. The author concludes: (1) The two tests give extremely different ratings. (2) The Healy test is the easier of the two. (3) The Healy test seems to test a concrete inferior type of intelligence, and the Terman an abstract superior type. (4) As it is the latter type that is most used in school work, the Terman test should be more predictive of school success.

A. T. POFFENBERGER (Columbia)

726. O'BRIEN, J. A., Training in Perception as a Means of Accelerating the Silent Reading Rate. *J. of Educ. Psychol.*, 1920, 11, 402-417.

The author discusses the relative importance of the foveal and peripheral vision in the reading process. It is the latter which through premonitions of words and premonitions of meanings enables the scope of perception to be greatly enlarged. "Reading which is wholly or chiefly dependent upon foveal vision will be slow and halting, marred by too frequent pauses which inhibit the development of regular rhythmical swing of the eyes in traversing the printed line." The author quotes largely from the work of Dodge in this part of the paper. Imagery type is thought to play some part in determining speed of reading, but the evidence is unsatisfactory, and great improvement seems possible whatever the imagery bias may be. Elaborate experimental procedure is described for training in rapidity of reading by means of perception cards, the immediate purpose being to train the pupil to see more

at a glance and to take in the material more quickly.

A. T. POFFENBERGER (Columbia) 17

727. GERRY, H. L., Further Data on the Bell Chemistry Test. *J. of Educ. Psychol.*, 1920, 11, 398-401.

The author confirms the statement made by another investigator that the standards set by the author of the Bell Chemistry test are too low.

A. T. POFFENBERGER (Columbia)

## 12. MENTAL EVOLUTION

728. KATZ, D. u. Révész, G., Experimentelle Studien zur vergleichenden Psychologie. Versuche mit Hühnern. *Zeits. f. angew. Psychol.*, 1921, 18, 307-320.

1. Durch einen Parlographen wird das Krähen eines Hahnes aufgenommen. Die akustisch-motorische Einstellung beim Krähakt des Hahns ist nichts absolut Starres, sondern gestattet eine Variationsbreite von einem Ton. Da der Hahn bei der Intonationsänderung die Melodiegestalt unverändert wiedergibt, soliegt hier ein Ansatz zu der Produktion von Tönen mit Beibehaltung der relativen Tonschritte vor.—2. Das Huhn holt bei der Futtersuche den Kopf ruckweise den Bewegungen des Rumpfes nach. Es wird experimentell erwiesen, dass diese Bewegungen optisch bedingt sind, und dass sie die Erkennbarkeit der optischen Umgebung sichern sollen.—3. Ein drittes Experiment am Huhn beweist, dass Beleuchtungsverhältnisse berücksichtigt werden können, für die keine Erfahrungen vorliegen.

H. BOGEN (Berlin)

729. POHLMAN, A. G., Have Birds an Acute Sense of Sound Location? *Science*, 1921, 53, 439-440.

G. J. RICH (Pittsburgh)

## INDEX OF NAMES

ALPHABETICAL INDEXES OF NAMES AND SUBJECTS WILL BE FOUND AT THE END OF THE VOLUME

Names of contributors are printed in **SMALL CAPITALS**, and the page numbers of the contributions in **Full Face Type**. In the case of authors reviewed, abstracted or summarized the page numbers are in *Italics* and in the case of mention in the notes and book lists they are in Roman type.

Abbot, E. S., 422  
Abbott, A., 347  
Ach. N., 524  
ACHILLES, E. M., 1, 2, 13, 16, 17, 19, 24,  
25, 26, 27, 46, 47, 48, 49, 53, 252, 253,  
283, 286, 323, 324, 328, 332, 335, 336,  
337, 349, 408, 430, 640, 658, 664, 665,  
667, 668  
Adams, H. F., 323  
Adler, A., 452  
Adler, H. M., 161  
Affleck, G. B., 169  
Aguayo, A. M., 294  
Alkins, H. A., 568  
Allard, H. A., 53, 54  
Allen, S., 551  
Allis, E. P., Jr., 5  
d'Allonne, R., 249, 527  
ALLPORT, E. H., 216, 542, 478, 556  
ALLPORT, G. W., 441, 452, 556  
Almack, J. C., 558  
Almack, J. S., 558  
Alruth, S., 414  
Alston, J. H., 201  
Anderson, H. M., 365  
Anderson, L. D., 430  
Anderson, C. J., 348  
ANDERSON, J. E., 239, 242, 247, 296, 336,  
636  
Anderson, V. V., 143  
Angell, F., 111  
Angell, J. R., 111, 202, 236, 438  
Angier, R. P., 201  
Antonini, G., 310  
Arai, T., 478  
Archer, R. L., 374  
Argelander, A., 642  
Arlett, A. A., 95  
Arlett, A. H., 478, 658  
Arps, G. F., 56, 283, 311, 478  
Ash, I. E., 478, 481  
Assagioli, R., 264  
Austin, S. D. M., 313  
Aveling, F., 374

Baade, W., 113, 629  
Babiniski, J., 374  
Bagby, E., 325, 345, 394, 479  
Bagg, H. J., 110  
Baker, H. J., 337  
BALDWIN, B. T., 41, 49, 99, 295, 568  
Bamesberger, V. C., 295  
Bannister, H. S., 374  
Baragar, C. A., 418  
Barat, 495  
Barker, L. F., 296  
Barnes, H. E., 20, 257  
Barnilo, P., 495  
Barrett, A. M., 416  
Bartlett, F. C., 403  
Barton, J. W., 111  
Bartsch, K., 662  
Bach, V., 410  
Bass, 478, 479  
Bassett, D. M., 53  
Bateman, W. G., 495  
Bateson, W., 177  
Batson, O. V., 7  
Batten, L. W., 374  
Baudouin, C., 234, 374  
Baumberger, J. P., 399  
Baxter, M. F., 2  
Baynes, H. G., 156  
Beaulavon, G., 295  
Beaunis, H., 243, 568  
Bedaux, C. E., 649  
Beeson, M. F., 47, 295  
Behan, R. J., 201  
Bell, J. C., 302, 309, 312, 317, 327, 342,  
344, 345, 351, 630, 638, 639, 644, 647,  
659, 672  
Bellavitis, C., 278  
Belot, G., 541  
Benedict, F. G., 479  
Bentley, M., 111, 438  
Bergson, H., 110, 210, 438  
Berliner, A., 479  
Berman, L., 452  
Bernard, L. L., 248

Bernfeld, S., 489  
 Bernheim, H., 374  
 Berry, C. S., 146, 479  
 Bevis, W. M., 551  
 Bigelow, E. B., 252  
 Bills, M. A., 303  
 Binder, R. M., 209  
 Bingham, W. V., 68  
 Birdie, M. F., 1  
 Bishop, H. G., 305  
 Bishop, M., 121  
 Black, D., 7  
 Blakeslee, A. F., 434  
 Blanchard, P., 258  
 Blumgart, L., 281  
 Boas, F., 142  
 Bode, B. H., 314  
 Boden, F., 663  
 Bogardus, E. S., 209  
 BOGEN, H., 629, 630, 637, 642, 643, 644,  
     646, 647, 648, 655, 657, 661, 662,  
     663, 676  
 Bohn, G., 564  
 Bonaventura, E., 244  
 Bonne, 374  
 Book, W. F., 89  
 Boriac, E., 374  
 BORING, E. G., 3, 14, 56, 57, 69, 110, 112,  
     180, 314, 438, 440, 631  
 Bortino, A., 264  
 Boswell, F. P., 210  
 Bott, E. A., 56  
 Bourman, L., 645  
 Bourdon, E., 518  
 Boven, W., 547  
 Bowers, P. E., 41  
 Bowman, K. M., 31  
 Braddock, C., 306  
 Brandenburg, G. C., 496  
 Brandenburg, J., 496  
 Bregman, E. O., 408  
 Breese, B. B., 202  
 Breitweiser, J. V., 440  
 Bridges, C. B., 178  
 BRIDGES, J. W., 30, 31, 32, 33, 36, 46, 89,  
     255, 256, 257, 259, 260, 261, 262, 364,  
     568, 651, 652, 653, 654, 655, 656, 657  
 Bridgmen, O. L., 440  
 Briggs, H., 247  
 Briggs, T. H., 347  
 BRIGHAM, C. C., 117, 134, 149, 153, 173,  
     178  
 Bronner, A. F., 84, 639  
 BROOKE, M. C., 33, 34, 35, 149, 258, 325,  
     413, 414  
 Rousseau, A., 235  
 BROWN, C. R., 300, 301, 333  
 Brown, P. K., 409  
 Brown, S., 14  
 Brown, W., 151, 374, 440  
 Brubacher, A. R., 452  
 Brugmans, H. J. F., 650  
 Bruhn, W., 294  
 Bryant, F. A., 364  
 Bryce, W. H., 330  
 Buckingham, B. R., 50, 109, 295  
 Buckley, A. C., 383  
 Buckley, D., 302  
 Buermeyer, L., 114  
 Bullough, E., 411  
 Bumke, 374, 551  
 BUNCH, C. C., 70  
 Burnham, W. H., 145, 169, 479  
 Burr, C. B., 234, 381  
 Burtt, H. E., 97, 283, 351, 479, 659  
 Bury, J. B., 226  
 Buscaino, V. M., 307  
 Busch, A., 637  
 Bush, A. D., 479  
 Buswell, G. T., 425  
 Butler, P., 650  
 Buxton, L. H. D., 332  
 Byrd, H., 19  
 Caillard, E. M., 374  
 Calkins, M. W., 237, 634  
 Campbell, C. M., 357, 419  
 CAMPBELL, I. G., 31, 32, 128, 501, 530,  
     537, 538, 539, 556, 565  
 Cappa, A. G., 432  
 Carmichael, R. D., 419  
 Carpita, E., 109  
 Carr, H. A., 76  
 Cartell, H., 374  
 Case, E. C., 436  
 Cassell, E. E., 479  
 Castle, W. E., 304  
 Cattell, J. McK., 67, 115, 364, 453, 568  
 Chandler, A. R., 530  
 Chapman, J. C., 234, 432, 479, 673  
 Chase, H. W., 364  
 Chassel, C. F., 343  
 Chassel, L. M., 343  
 Cheney, C. O., 415  
 Chidester, F. E., 54  
 Child, C. M., 294  
 Child, E., 234  
 Claparéde, E., 529  
 Clark, L. P., 36, 257  
 Clark, W. W., 41  
 Clarke, C. K., 157, 417  
 Clausen, R. E., 435  
 Cobb, M., 364  
 Cobb, M. V., 228  
 Cody, S., 167  
 Cole, G. D. H., 225  
 Coleman, W. M., 247, 434, 536  
 Coles, L. E., 364  
 Collar, D. J., 561  
 Collins, G. N., 364  
 Colloton, C., 671  
 Comstock, C., 315  
 Conklin, E. G., 270, 364  
 Conklin, E. S., 440

Cook, E. C., 154  
 Cook, M. H., 241  
 Coover, J. E., 236, 345, 440  
 Copp, E. F., 489  
 Coriat, I. H., 654  
 Cornell, W. B., 423  
 Corwin, G. H., 641  
 Coulter, J. M., 364  
 Courbon, P., 548  
 Courtier, J., 374  
 Craig, W., 565  
 Craigie, E. H., 390  
 Crane, H. W., 568  
 Creasy, H. M., 653  
 Creighton, J. E., 530  
 Crile, G. W., 272, 401, 523  
 CROSLAND, H. R., 138, 318, 325, 353, 393,  
     399, 523, 563, 565, 633, 660  
 Crozier, W. J., 437  
 CURRIE, J. P., 552, 561  
 Curtis, H. S., 419, 429  
 Cutsforth, T. D., 140

Dainow, M., 109  
 Dallenbach, K. M., 110, 236, 479, 638  
 DASHIELL, J. F., 78, 115, 132, 160, 168,  
     169, 394, 401, 402, 403, 406, 407, 412,  
     419, 428, 429, 430, 433, 434, 620  
 Dautrebande, L., 636  
 Davenport, C. B., 45, 364, 453  
 Davies, G. R., 23  
 Davis, H., 559  
 Davison, M., 84  
 Dawley, A., 234  
 Dawson, A. B., 5  
 Dawson, C. E., 285  
 Dealey, J. Q., 210  
 DE CAMP, J. E., 508, 514, 515, 516, 527,  
     564, 620  
 Delacroix, H., 521  
 Delgado, H. F., 294  
 Del Greco, F., 310  
 Demos, R., 532  
 Denton, G. B., 116  
 Dercum, F. X., 374  
 Derrick, S. M., 337  
 Dessoir, M., 235  
 Detwiler, S. R., 6  
 Devine, 329  
 Devlin, F. E., 156  
 De Wesendonk, C., 514  
 Dewey, E., 234  
 De Wulf, M., 439  
 Dickson, V. E., 285, 440  
 Dimmick, F. L., 12  
 DISERENS, C. M., 119, 120, 142, 143, 167,  
     504, 505, 506, 509, 516, 518, 521, 522,  
     527, 528, 529, 532, 533, 534, 535, 536,  
     540, 541, 543, 547, 548, 549, 557, 562,  
     564  
 Doane, S. E., 409  
 Dockeray, F. C., 318, 406, 479, 482, 568

Dodge, R., 69, 75, 479  
 Doeblin, M. I., 171  
 Doherty, C. E., 159  
 Doi, Y., 239  
 Doll, E. A., 335, 336, 338  
 Dooley, L., 259, 453  
 Dornan, S. S., 496  
 Douglass, C. E., 346  
 Dow, G. S., 210  
 Downey, J. E., 87, 92, 175, 234, 364, 453  
 Drake, R. B., 153  
 Drever, J., 357  
 Drzewina, A., 564  
 Dubois, R., 178  
 Dumas, G., 522  
 Dunlap, K., 75, 115, 210, 234, 286, 345,  
     357, 479, 633  
 Dupuis, L., 534  
 Durkheim, E., 251  
 Dwelshauvers, G., 235

East, W. N., 40  
 Eby, H. L., 432  
 Edgell, B., 139  
 Edman, I., 210  
 Edmondson, M. B., 169  
 Edridge-Green, F. W., 515  
 Edwards, A. S., 88, 109  
 d'Eichthal, E., 234  
 Elderton, E. M., 332  
 Eliot, T. D., 28, 210  
 ELLWOOD, C. A., 203, 219, 225, 226  
 ERLINGTON, G. A., 238, 243, 244, 246,  
     254, 264, 265, 278, 289, 290, 293, 302,  
     305, 307, 310, 312, 324, 325, 386  
 Engelen, P., 374  
 ENGLISH, H. B., 10, 18, 113, 114, 120,  
     122, 123, 124, 125, 126, 127, 128, 135,  
     140, 141, 297, 438, 631  
 Eno, H. L., 110, 294  
 Erdmann, B., 109  
 Esper, E. A., 490, 496  
 Estabrook, A. H., 430  
 Esterly, C. O., 16  
 Evans, J. E., 479  
 Everdell, E. D., 438

Farrell, E. E., 439  
 Fay, D. W., 32, 33  
 Feder, R. B., 479  
 Fleky, A., 206  
 Fenton, C., 665  
 Ferguson, G. O., 428  
 Fernald, G. G., 161, 453  
 Fernald, G. M., 440  
 Fernald, M. R., 234  
 Fernald, W. E., 42, 154  
 FERNBERGER, S. W., 110, 137, 207, 222,  
     479, 569, 639  
 Ferrari, G. C., 255, 265, 289, 293  
 Ferree, C. E., 11, 302  
 Findlay, J. J., 225

Finlayson, A., 364  
 Finley, C. S., 147  
 Fisher, B., 420 et seq.  
 Fitzgerald, F., 84, 568  
 Flounoy, T., 50, 232  
 Fluegel, J. C., 517  
 Forbush, E. M., 152  
 Forsyth, D., 262  
 Foster, J. C., 48  
 Foucault, M., 134  
 Frachtenberg, L. J., 143  
 Frank, H., 655  
 Frankfurter, W., 479  
 FRANZ, S. I., 65, 238, 282, 296, 453  
 Franzen, R., 334, 440, 674  
 Freeland, G. E., 402  
 Freeman, F. N., 40, 342, 426, 428  
 Freud, S., 148  
 FREYD, M., 323, 333  
 Friedländer, H., 201  
 Fröbes, J., 10, 512  
 Froeberg, S., 327, 479  
 Froment, J., 374  
 Frost, E., 98, 253  
 Furbush, E. M., 270, 416

GALLAGHER, M. E., 156, 157, 158, 159,  
 409, 415, 417, 418, 422, 423, 430, 433,  
 437, 658, 664  
 Galli, A., 307, 312  
 Galloway, T. W., 294  
 Handy, T. H., 374  
 Gardner, H. L., 438  
 Garrison, S. C., 341  
 GARTH, T. R., 16, 94, 112, 114, 115, 139,  
 141, 167, 235, 298, 299, 308, 314, 318,  
 331, 335, 470, 480  
 GATES, A. I., 334, 347, 348, 349, 358, 427,  
 453, 480, 674  
 Gatewood, E. L., 311, 489  
 Gault, R. H., 107, 286, 374, 537  
 Gaw, E. A., 440  
 GAW, F. I., 161, 279, 287, 341, 558  
 Gebhart, J. C., 429  
 Gelb, A., 636  
 Gellhorn, E., 204  
 Gemelli, A., 307, 312  
 Germane, C. E., 348  
 Gerry, H. L., 676  
 Gesell, A., 252  
 Gigson, S. M., 337  
 Giddings, F. H., 210  
 Giese, F., 235  
 Gilbreth, F. B., 409, 664  
 Gilbreth, L. M., 664  
 Gilles, A., 529  
 Gilliland, A. R., 668  
 Gilman, E., 434, 565  
 Gilson, E., 237  
 Goddard, H. H., 86, 163, 275, 364, 550,  
 568  
 Goldschmidt, R. H., 637

Goldstein, K., 636  
 Goodspeed, T. H., 435  
 Gordon, E., 337  
 Gordon, R. G., 375  
 Gosline, H. I., 453  
 Gowin, E. B., 453  
 Fraim, G. O., 418  
 Graves, F. P., 438  
 Gray, C. T., 51  
 Gray, W. S., 348  
 Greenberg, B., 437  
 Greenberg, J., 400  
 Gregg, D., 276  
 Gregory, J. C., 118, 167, 532  
 Griffith, C. R., 54, 100, 201  
 Griffiths, J., 24  
 Griffiths, C. H., 309  
 Groetzinger, M., 324  
 Grose, S. L., 308  
 GROSKAUZ, O., 546, 550  
 Grossart, F., 520  
 Groves, E. R., 258  
 Grünbaum, A. A., 645  
 Gualino, L., 264  
 Guernsey, M., 70  
 Guyer, M. F., 291, 364

Hadfield, J. A., 375  
 Haight, D., 133  
 Haines, T. H., 43  
 Haldane, J. S., 636  
 Hall, A. R., 390  
 Hall, G. S., 110, 160, 216, 234, 403  
 Halverson, H. M., 440  
 Hamburger, M., 294  
 Hamilton, M. J., 144  
 Hansen, C. F., 668  
 Harding, J. R., 554  
 Hargreaves, H. L., 374  
 Harris, D. F., 527  
 Hart, B., 375  
 HART, H. N., 23, 28, 258, 281  
 Hartenberg, P., 453  
 Hartman, G. N., 645  
 Hartridge, H., 242, 515  
 Hattinberg, H. v., 643  
 Hauck, A. A., 438  
 Haviland, C. M., 651  
 Hayes, M. H. S., 98, 234  
 Head, H., 508, 549  
 Healy, W., 151  
 Heck, W. H., 480  
 Heckman, S. B., 439  
 Heinitz, W., 109, 489, 642  
 Heller, W. S., 165  
 HENDERSON, E. N., 353  
 Henmon, V. A. C., 357  
 Henri, V., 117  
 Heron, D., 364  
 Hermann, F., 511  
 Hermann, O., 109  
 Herrick, C. J., 120, 391

Hesnard, A., 548  
 Heymans, G., 294, 650  
 Hill, A. V., 636  
**HINCKS, E. M.**, 130, 151, 175, 276, 278  
**HODGKINSON, L. M.**, 253, 268  
 Hoffman, R. A. E., 551  
 Holland, R. T., 201  
 Holley, C. E., 295  
**HOLLINGWORTH, H. L.**, 17, 109, 376, 439,  
 453, 480  
**Hollingworth, L. S.**, 439  
 Horn, E., 284  
 Horwitz, A. E., 422  
 House, S. D., 655  
 House, W., 40  
 Howard, D. T., 65  
 Hubbard, L. D., 256  
 Hubbert, H. B., 619  
 Huey, K., 438  
 Hull, C. L., 102, 634, 647  
 Hull-Lugoff, 453  
 Humphrey, G., 395  
 Humphrey, S. K., 282  
 Hunt, R. S., 537, 553  
**HUNTER, W. S.**, 56, 91, 202, 212, 357, 621  
 Huth, A., 647  
 Hyde, I. H., 480  
  
 Ingalese, R., 234  
 Ioteyko, I., 480  
 Ireland, M. W., 271  
 Isaacs, S., 318, 406, 479, 480  
  
 Jacobsohn-Lask, L., 294  
 Jacobson, E., 503  
 Jaederholm, G., 365  
 Jaensch, E. R., 18, 109, 513  
 James, E. O., 210  
 Janet, M. C., 28  
 Janet, P., 296, 375, 528  
 Jankelevich, S., 290  
 Jarrett, M. C., 421  
 Jastrow, J., 453  
 Jeffrey, G. R., 375  
 Jennings, H. S., 364  
 Joachim, H. H., 135  
 Johnson, B., 83  
 Johnson, H. M., 73, 480, 619  
 Johnson, O. J., 480  
 Johnson, S. E., 240  
 Johnstone, E. R., 26, 27, 336  
 Joly, J., 515  
 Jones, A. I., 12  
**JONES, A. M.**, 551, 649  
**JONES, B. J.**, 161, 170, 171, 176, 267, 288  
 Jones, C. T., 24  
 Jones, D., 496  
 Jones, E. D., 480  
 Jones, L. A., 13  
 Jörger, J. B., 480  
 Jung, C., 453  
  
 Judd, C. H., 202, 348  
 Jung, C. G., 357  
  
 Kaiser, I. R., 132  
**KANTOR, J. R.**, 67, 246, 247, 299, 315, 357,  
 453, 645  
 Kappers, C. V. A., 634  
 Karlson, K. J., 480  
 Katz, D., 122, 526, 676  
 Keedy, E. R., 334  
**KELLEY, C. M.**, 333, 334, 638, 639  
 Kelley, T. L., 440  
 Kelly, T. L., 347  
 Kelsey, C., 365  
 Kempf, E. J., 453  
**KENNEDY, M.**, 146, 274, 282  
 Kenworthy, M. E., 420  
 Ketner, S. P., 432  
**KIESOW, F.**, 238, 239, 244, 246, 249, 302  
 Kirschmann, A., 294, 512  
**KITSON, H. D.**, 103, 237, 242, 243, 249,  
 251, 266, 290, 403, 404, 405, 410, 411,  
 412, 517, 518, 536, 537, 549, 561, 568  
 Klages, L., 294  
 Kleijn, A. de., 201  
 Klemm, O., 125, 510  
 Klieneberger, O., 545  
 Knight, F. B., 674  
 Kohn, S. C., 50, 52, 284, 285, 344, 432  
 Kornhauser, A. W., 365  
 Kraepelin, E., 546  
 Kroeker, A. L., 496, 557  
 Kröger, H., 644  
 Kroh, Ö., 141, 526  
 Kronfeld, A., 651  
 Kuderna, J. G., 287  
 Kuenburg, M. v., 663  
 Kuntz, A., 7, 9  
 Kuo, Z. Y., 440  
  
 Ladd, G. T., 202, 439  
 Ladell, R. G. M., 375  
 Laird, D. A., 306  
 Laird, J., 504  
 Lalo, C., 534  
 Lambert, A., 658  
 Landacre, F. L., 241  
 Lange, J., 480  
 Langfeld, H. S., 294, 375, 480  
 Larsell, Ö., 390  
 La Rue, 455  
 Lashley, K. S., 42, 480, 620  
 Laurens, H., 6  
 Lay, W., 110  
 Layton, S. H., 341  
 Lazell, E. W., 201  
 Leahy, S. R., 271  
**LEAMING, R. E.**, 38, 39, 40, 148, 150, 151,  
 155, 316, 328, 329, 330, 331, 417  
 Leclère, A., 266  
 Le Dantec, F., 453  
 Lee, S., 440

Lee, V., 480  
 Lehman, A., 480  
 LEUBA, J. H., 56, 232, 318  
 Lewis, P. A., 178  
 Lichtenberger, J. P., 281  
 Lincoln, E. A., 172  
 Lindsay, E. E., 673  
 Lindworski, J., 646  
 Ling, P., 365  
 LINK, H. C., 25, 110, 132, 226, 251, 252,  
 283, 284, 313, 321, 322, 396, 397, 399  
 LIPPMANN, O., 234, 637, 649, 650, 651, 651  
 Lippincott, W. A., 435  
 Lips, J. E., 127, 511  
 Livet, L., 543  
 Lodge, O., 278  
 Lodge, R. C., 21  
 LOWDEN, G., 47, 163, 272, 349, 559  
 Lowie, R. H., 210, 540  
 Lowrey, L. G., 268  
 Luckey, G. W. A., 81  
 Ludgate, K. E., 76  
 Lufkin, H. M., 174  
 Lugoff, L. S., 647  
 Lundholm, H., 246  
 Luquet, G. H., 173  
 Lurie, L. A., 270  
 Maass, J. G. E., 388  
 MacCurdy, J. T., 237  
 MacDonald, A., 653  
 MACLEISH, I. M., 559  
 Macht, D. I., 480  
 Madson, I. N., 164, 341  
 Magni, J. A., 406  
 Magnus, R., 201  
 Magnussen, J., 110  
 Maimud, R. S., 641  
 Manoia, A. R., 243  
 Marcus, L., 47  
 Marriott, C., 410  
 Marsh, H. D., 480  
 Marshall, H. R., 143, 343, 568  
 Marston, W. M., 279  
 Martens, H. A., 234  
 Martin, E. G., 17  
 Martin, L. J., 109, 453  
 Martyn, G. W., 480, 481  
 Mason, M. L., 240  
 Mason-Thompson, E. R., 109  
 Mateer, F., 84  
 Mathewson, T. H. R., 375  
 Matsumoto, T., 39  
 MAUPIN, O., 573  
 Mauss, M., 535  
 MAXFIELD, F. N., 346  
 May, J. V., 416  
 May, M. A., 164  
 McAree, J. V., 375  
 McCall, W. A., 347, 482  
 McComas, H. C., 345, 407  
 McConough, D. L., 645  
 McDougall, W., 33, 35, 108, 210, 219, 357,  
 375, 453, 481, 568, 642  
 Melrose, J. A., 503  
 Mendicini, A., 149  
 Menzel, M., 321  
 Menzies, W. F., 38  
 Merriam, C., 440  
 Merton, E., 348  
 METCALF, J. T., 181, 201, 439  
 Meyer, A., 296  
 Meyer, M. F., 623  
 Michelson, T., 496  
 Miles, G. W., 30  
 Miles, W. R., 2, 102, 481, 630  
 Miller, A., 512  
 Miller, K. G., 296  
 Miner, J. B., 3, 83, 323  
 Mitchell, D., 439  
 Mitchell, T. W., 295  
 Moll, A., 544  
 Monrad-Krohn, G. H., 331  
 Monroe, W. S., 50, 109  
 Montesano, 375  
 Montgomery, G., 440  
 Moodie, R. L., 6  
 Moore, B. V., 48, 104  
 Moore, H. I., 454  
 Moore, H. T., 140, 668  
 Moore, T. V., 656  
 Moos, F. A., 439  
 Morgan, E., 454  
 Morgan, J. D., 236  
 Morgan, J. J. B., 23, 312, 481  
 Morgan, T. H., 365  
 Morton, W. B., 480  
 Moss, A., 119  
 Mott, F., 328, 417  
 Moxon, C., 255  
 Mudge, E. L., 324, 424, 429  
 Mulford, H. J., 346  
 Mundie, G. S., 158  
 Murchison, C., 333, 568  
 MURPHY, G., 129, 164, 165, 166, 274, 638,  
 639  
 Muscio, B., 396, 481, 505  
 Muth, G. F., 663  
 Myers, C. E., 34x  
 Myers, C. S., 111, 202, 236, 357  
 Myers, G. C., 168, 311, 375, 425, 429, 568  
 Myerson, A., 454  
 Naccarti, S., 667  
 Neal, H. V., 240, 241  
 NEWHALL, S. M., 341  
 Nice, M. M., 429, 496  
 Nittono, K., 9  
 Noble, E., 539  
 Nolan, W. J., 479  
 Norcross, W. H., 660  
 Norsworthy, N., 454

Oatman, M. E., 429, 496  
 O'Brien, F. J., 317  
 O'Brien, J. A., 675  
 Oertel, H., 415  
 OGDEN, R. M., 497  
 Olmstead, J. M. D., 393  
 Ordahl, G., 365  
 ORNDORFF, 118, 143  
 Otis, A. S., 20, 323, 365  
 Painter, W. S., 481  
 Pannenborg, H. J., 480  
 Pannenborg, W. A., 489  
 Parker, S. C., 340  
 Parkhurst, H. H., 139  
 Parodi, D., 295  
 Pashal, F. C., 480  
 Paton, S., 129, 454  
 Patrick, G. T. W., 210  
 Patrizi, M. L., 481  
 Patterson, D. G., 98  
 Paulhan, F., 506  
 Pawlow, J. P., 516  
 Payne, A. F., 168  
 Paynter, R. H., Jr., 110, 226  
 Peaks, A. Z., 481  
 Pear, T. H., 404  
 Pearl, R., 365  
 Pearson, K., 300, 301, 365  
 PECKSTEIN, L. A., 80, 138, 303, 311, 312,  
 316, 338, 339, 439  
 Pepper, S. C., 248  
 Perret, W., 515  
 Perrin, F. A. C., 401, 525, 644  
 Perry, R. B., 209, 314, 357, 501  
 Perrycoat, F. H., 527  
 Peter, R., 235  
 Peters, I. L., 258  
 Peters, W. E., 496  
 Peterson, H. A., 287  
 Peterson, J., 46, 80, 423  
 Phillips, F. M., 481  
 Piaget, J., 562  
 Picard, M., 298, 308, 533  
 Pillsbury, W. B., 56, 111, 202  
 Ping, C., 436  
 Pintner, R., 47, 343, 365  
 Piorkowski, C., 284  
 Platt, C., 234  
 Podiapolksky, P. P., 375  
 POFFENBERGER, A. T., 316, 342, 343, 350,  
 351, 410, 423, 424, 425, 426, 427, 480,  
 481, 482, 669, 670, 671, 672, 673, 674,  
 675, 676  
 Pohlman, A. G., 676  
 Polack, 516  
 Pollock, H. M., 152, 152, 270, 421  
 Pollock, L. J., 14, 201  
 Ponzo, M., 249  
 Porter, J. P., 93, 619  
 Porteus, S. D., 53, 278, 295, 328, 454  
 Potts, W. A., 375  
 Poull, L. E., 671  
 Powers, M. J., 43  
 Poyer, G., 533  
 Pradines, M., 242  
 Prantl, R., 375  
 PRATT, C. C., 11, 510, 511, 512, 513, 520,  
 524, 526, 527, 554, 555, 560, 629, 636,  
 640, 645  
 Pressey, L. W., 285, 350, 454  
 Pressey, S. L., 52, 91, 313, 348, 349, 350,  
 365, 454, 481, 559, 561  
 Prideau, E., 375  
 Prince, M., 454  
 Procter, T. H., 22  
 Proctor, W. M., 50  
 PROUTY, R., 275, 341  
 Pruette, L., 29  
 PYLE, W. H., 621, 622  
 Rabaud, E., 521, 564  
 Ralston, R., 365  
 Raman, C. V., 514  
 Rand, G., 11, 302  
 Rawlings, E., 267  
 Raymond, E., 375  
 Rayner, H., 316  
 Read, C. S., 115, 330, 439  
 Ream, M. J., 96, 668  
 Reamer, J. C., 339  
 Reed, R., 551  
 Reedy, E., 46  
 Rees-Thomas, W., 155  
 Reeves, P., 13, 74  
 Regensburg, J., 133  
 Reiter, F. H., 56  
 Renouvier, C., 109  
 Renshaw, S., 47  
 Révész, G., 124, 489, 560, 676  
 RICH, G. J., 1, 3, 11, 12, 16, 20, 29, 33, 53,  
 115, 116, 117, 129, 131, 132, 133, 136,  
 137, 140, 297, 304, 305, 306, 306, 308,  
 309, 313, 314, 315, 317, 346, 631, 633,  
 640, 641, 645, 650, 653, 676  
 Richards, A. A., 440  
 Richards, E. L., 419  
 Richardson, M. W., 296  
 Richet, C., 365  
 Riedel, 629  
 Rignano, E., 325, 380  
 Ritter, W. E., 440  
 Rivers, W. H. R., 357, 375  
 Roback, A. A., 114, 295, 324  
 Robbins, H., 481  
 Robertson, A., 375  
 Robinson, A., 405  
 Robinson, C. C., 258  
 ROBINSON, E. S., 27, 71, 546  
 Robinson, L. A., 481  
 Robinson, W., 156  
 Roemer, 657  
 Rogers, A. K., 21, 537  
 Rogers, H. W., 93

Roncagli, V., 310  
 Root, W. T., 339, 430  
 Rosanoff, A. J., 37, 235, 364, 365, 454  
 Rosenow, C., 49  
 Ross, E. A., 210  
 Rows, R. G., 296  
 Rubin, E., 140, 527  
 Ruch, G. M., 439, 454, 664  
 RUCKMICK, C. A., 72, 212, 381, 438  
 Ruger, H. A., 482  
 Rugg, H., 454, 671  
 Ruml, B., 234, 335  
 Rupp, H., 489  
 Russell, B., 135  
 Russell, F. T., 520

Sabin, E. E., 115  
 Sachs, H., 648  
 Saffiotti, F. V., 239  
 Saladini, R., 290  
 Salter, W. H., 413  
 Salvoni, M., 290  
 de Sanctis, S., 324  
 Sandiford, P., 433  
 Sands, I. J., 271  
 Sanford, E. C., 110  
 Saxby, I. B., 622  
 Scalapino, W., 489  
 Scherrer, E., 126, 555  
 Schiefferdecker, P., 406  
 Schilling, W., 258, 481  
 Schiller, F. C. S., 135  
 Schiötz, C., 168  
 Schmalhausen, S. D., 654  
 SCHOKN, M., 483  
 Schorn, M., 322  
 Schrenck-Notzing, v., 235  
 Schroeder, T., 30, 652  
 Schulte, R. W., 648  
 Schultz, J. H., 546  
 Schumann, F., 123, 513  
 Schüssler, H., 489, 662  
 SCHWESINGER, G. C., 174, 228, 250, 286  
 Scripture, E. W., 406, 514  
 Seashore, C. E., 489  
 Sechhaye, A., 496  
 Sellars, R. W., 119  
 Shand, A. F., 113, 206  
 Shepard, J. F., 79, 619  
 Shepherd, W. T., 105  
 Silk, S. A., 272  
 SINCLAIR, 133, 139  
 Singer, H. D., 280, 421  
 Skaggs, E. B., 317, 568, 675  
 Slossen, E. E., 33  
 Smith, D., 481  
 Smith, E. M., 403  
 Smith, M., 481  
 Smith, S., 78  
 Snoddy, G. S., 77, 312, 440  
 Snyder, A., 286, 345  
 Sofiotti, F., 365

Sommermier, E., 91  
 Southard, E. E., 144, 375, 454  
 Speath, R. A., 392  
 Spaulding, E. R., 40, 258, 269, 454  
 Spencer, L. T., 647  
 Spitzka, E. A., 236  
 Sprecht, W., 480  
 Stanley, L. L., 333  
 Starch, D., 365, 481  
 STARR, H. E., 392  
 Stecher, L. I., 99, 481  
 Stenquist, J. L., 305  
 Stern, E., 283, 649  
 Stern, W., 235, 294  
 Stinchfield, S. M., 295, 649  
 Stockard, C. B., 178  
 Stoddart, W. H. B., 150  
 Stone, C. P., 553  
 Stoops, J. D., 538, 556  
 Stragnell, G., 651  
 Stratton, G. M., 56, 345, 652  
 Strecker, E. A., 43, 268  
 Streeter, L. C., 305  
 Strong, C., 304  
 Strong, E. K., Jr., 235, 254, 439, 482  
 Strong, M. K., 261  
 Stumpf, C., 489  
 Sullivan, A. H., 136  
 Sully, J., 234  
 Swift, E. J., 111  
 Swift, E. L., 422  
 SYLVESTER, R. H., 17, 43, 44, 248, 263,  
 270, 271, 272, 503, 507, 544  
 Szymanski, J., 643

Tait, W. D., 423  
 Tallman, G. G., 481  
 Tamassia, A., 254  
 Tanner, A., 454  
 Tansley, A. G., 110, 379  
 Terman, L. M., 107, 288, 365, 440, 454,  
 665, 670  
 Terry, P. W., 671  
 Tessier, G., 307  
 Thalman, W. A., 304  
 Thiesen, W. W., 52  
 Theodoridis, C., 554  
 Thiele, N., 313  
 Thomas, C. D., 325  
 Thompson, C. B., 109  
 Thomas, G. H., 404  
 Thorburn, J. M., 143  
 Thorndike, E. L., 111, 250, 283, 350, 365,  
 424, 454, 481, 482, 568, 673  
 Thouless, R. H., 568  
 Thurston, H., 413  
 Thurstone, L. L., 66  
 Tillman, E. K., 653  
 Tischer, R., 544  
 Tisserand, P., 109  
 TITCHENER, E. B., I, 110, 117, 201, 202,  
 297, 388, 632, 633

Todd, J. W., 482  
 Tolman, E. C., 357, 440, 482  
 Tombleson, J. B., 375  
 Tompkins, E., 430  
 Town, C. H., 296, 366, 383  
 Towne, J. E., 256  
 Trabue, M. R., 365  
 Tramm, K. A., 251  
 Trevelyan, J. P., 235  
 Troland, L. T., 4, 130  
 Tung, S., 306

Uhlenhuth, E., 389  
 Uhrbrock, R. S., 170, 346  
 Ulrich, J. L., 620  
 URBAN, F. M., 222, 482  
 Usher, C. H., 301

Valentine, C. W., 412  
 Van Loon, F. H., 34, 140  
 Van Teslaar, J. S., 260  
 Vernon, H. M., 482  
 Vieweg, J., 646  
 Vincent, S. B., 620  
 Vinchon, J., 153  
 VITELES, M. S., 508, 634, 665  
 Vollmer, A., 250

Waelsch, E., 111  
 Wagenhals, F. C., 568  
 Wales, H., 34  
 Walkley, A. B., 411  
 Wallas, G., 357  
 Wallin, J. E. W., 13, 85, 176, 669  
 Wallon, H., 549  
 Walab, E. A., 439  
 Waples, D., 672  
 WARREN, H. C., 202, 380, 631  
 Washburn, M. F., 56, 111, 133, 308, 454,  
     481, 489, 568, 619  
 WASHBURN, R. W., 554, 556  
 Watson, J. B., 42, 202, 365, 405, 454, 482,  
     619, 620  
 Watt, H. J., 110, 411, 497, 518  
 Watts, F., 296, 537  
 Waugh, K. T., 106, 536  
 Weaver, E. W., 455  
 Webb, E., 455  
 Weber, E., 307  
 Weber, P. H., 141  
 Weinberg, A. A., 34, 140  
 Weiss, A. P., 568, 623  
 Weld, H. P., 110  
 WELLS, F. L., 236, 376, 379, 455, 482,  
     546, 551, 638, 639

Wells, W. R., 167, 412  
 Westfall, W. I. A., 282  
 Weston, S. F., 438  
 Wheeler, G. C., 352, 433  
 WHEELER, R. H., 5, 6, 7, 9, 14, 15, 16,  
     28, 36, 40, 42, 43, 44, 54, 130, 131, 140,  
     143, 144, 145, 146, 152, 153, 177, 178,  
     202, 237, 240, 241, 252, 368, 369, 370,  
     380, 381, 391, 389, 390, 391, 393, 393,  
     399, 415, 416, 419, 420, 421, 422, 434,  
     435, 436, 437  
 Whipple, G. M., 56  
 White, E., 39  
 White, W. A., 16, 146, 258, 455, 657  
 Whitechurch, A. K., 640  
 Wiegemann, O., 235  
 Williams, F. E., 44, 280  
 Williams, J. H., 109, 295, 365  
 Williams, J. M., 210  
 Winch, W. H., 482  
 Winfield, M., 304  
 Wirth, W., 120  
 Wirts, K. E., 340  
 Wilson, J. T., 508  
 Wintrebert, F., 509  
 Wolfe, A. B., 659  
 Wood, B. D., 672  
 Woodbridge, F. J. E., 298  
 Woodbury, E. M., 552  
 Woodill, E. E., 44  
 Woodrow, H., 440  
 Woods, E. L., 3, 25, 37, 45, 51  
 Woodworth, R. S., 111, 202, 296, 455  
 Woolbert, C. H., 13, 35  
 Wright, S., 178  
 Wright, W. K., 331  
 Wundt, W., 110

Yarbrough, J. U., 101, 620  
 Yates, D. H., 170  
 Yellowlees, D., 375  
 Yerkes, R. M., 115, 228, 365, 455  
 Yoakum, C. S., 104  
 Yokoyama, M., 131, 309  
 Young, H. H., 568  
 Young, K., 440  
 YOUNG, P. T., 2, 4, 11, 13, 14, 15, 20, 27,  
     35, 52, 137, 237, 238, 246, 247, 248, 250,  
     258, 438, 501, 520, 563, 631, 634, 639,  
     642, 645, 652, 659, 673

Zacchi, A., 386  
 Zaragueta-Beugoechea, J., 235  
 Zondek, B., 482

## INDEX OF SUBJECTS

Abstracts, General, 1, 113, 237, 297, 501, 629  
Nervous System, 4, 120, 239, 301, 389, 508, 634  
Sensation and Perception, 10, 122, 242, 302, 393, 510, 636  
Feeling and Emotion, 129, 246, 307, 520, 641  
Motor Phenomena and Action, 15, 134, 247, 310, 394, 521, 642  
Attention, Memory and Thought, 17, 135, 249, 312, 401, 523, 645  
Social Functions of the Individual, 20, 142, 250, 318, 406, 534, 647  
Special Mental Conditions, 28, 147, 255, 324, 412, 543, 650  
Nervous and Mental Disorders, 36, 151, 266, 328, 416, 545, 655  
Individual, Racial and Social Psychology, 41, 156, 279, 331, 419, 551, 657  
Mental Development in Man, 45, 164, 282, 334, 423, 558, 660  
Mental Evolution, 53, 177, 290, 352, 433, 563, 676  
Action and Motor Phenomena, Abstracts, 15, 134, 247, 310, 394, 521, 642  
American Psychological Association, Proceedings of, 57  
Statistics of, 569  
Animals, Habit Formation in, 573  
Attention, Memory and Thought, Abstracts, 17, 135, 249, 312, 401, 523, 645  
Character and Personality, 441  
Conditions, Special Mental, Abstracts, 28, 147, 255, 324, 412, 543, 650  
Cutaneous and Kinesthetic Senses, 181  
Development, Mental, in Man, Abstracts, 45, 164, 282, 334, 423, 558, 660  
Disorders, Nervous and Mental, Abstracts, 36, 151, 266, 328, 416, 545, 655  
Emotion and Feeling, Abstracts, 129, 246, 307, 520, 641  
Evolution, Mental, Abstracts, 53, 177, 290, 352, 433, 563, 676  
Feeling and Emotion, Abstracts, 129, 246, 307, 520, 641  
Formation, Habit, in Animals, 573  
Functions, Social, of the Individual, Abstracts, 20, 142, 250, 318, 406, 534, 647  
General, Abstracts, 1, 113, 237, 297, 501, 629  
Habit Formation in Animals, 573  
Human Instincts, 353  
Individual, Racial and Social Psychology, Abstracts, 41, 156, 279, 331, 419, 551, 657  
Social Functions of, Abstracts, 20, 142, 250, 318, 406, 534, 647  
Inheritance of Mental Traits, 358  
Instincts, Human, 353  
Kinesthetic and Cutaneous Senses, 181  
Language, Psychology of, 490  
Man, Mental Development in, Abstracts, 45, 164, 282, 334, 423, 558, 660  
Memory, Attention and Thought, Abstracts, 17, 135, 249, 312, 401, 523, 645  
Mental and Nervous Disorders, Abstracts, 36, 151, 266, 328, 416, 545, 655  
Mental Conditions, Special, Abstracts, 28, 147, 255, 324, 412, 543, 650  
Development in Man, Abstracts, 45, 164, 282, 334, 423, 558, 660  
Evolution, Abstracts, 53, 177, 290, 352, 433, 563, 676  
Traits, Inheritance of, 358  
Work, 456  
Motor Phenomena and Action, Abstracts, 15, 134, 247, 310, 394, 521, 642  
Musician, Psychology of, 483  
Nervous and Mental Disorders, Abstracts, 36, 151, 266, 328, 416, 545, 655  
System, Abstracts, 4, 120, 239, 301, 389, 508, 634  
Perception and Sensation, Abstracts, 10, 122, 242, 302, 392, 510, 636  
Personality and Character, 441  
Phenomena, Motor, and Action, Abstracts, 15, 134, 247, 310, 394, 521, 643  
Proceedings of the American Psychological Association, 57  
Psychology of Language, 490  
of the Musician, 483

Racial, Individual and Social Psychology, Abstracts, 41, 156, 279, 331, 419, 551, 657

Sensation and Perception, Abstracts, 10, 122, 242, 302, 393, 510, 636

Senses, Cutaneous and Kinesthetic, 181

Social Functions of the Individual, Abstracts, 20, 142, 250, 318, 406, 534, 647

Individual and Racial Psychology, Abstracts, 41, 156, 279, 331, 419, 551, 657

Psychology, 203

Sciences and Social Psychology, 203

Special Mental Conditions, Abstracts, 28, 147, 255, 324, 412, 543, 650

Statistics of the American Psychological Association, 569

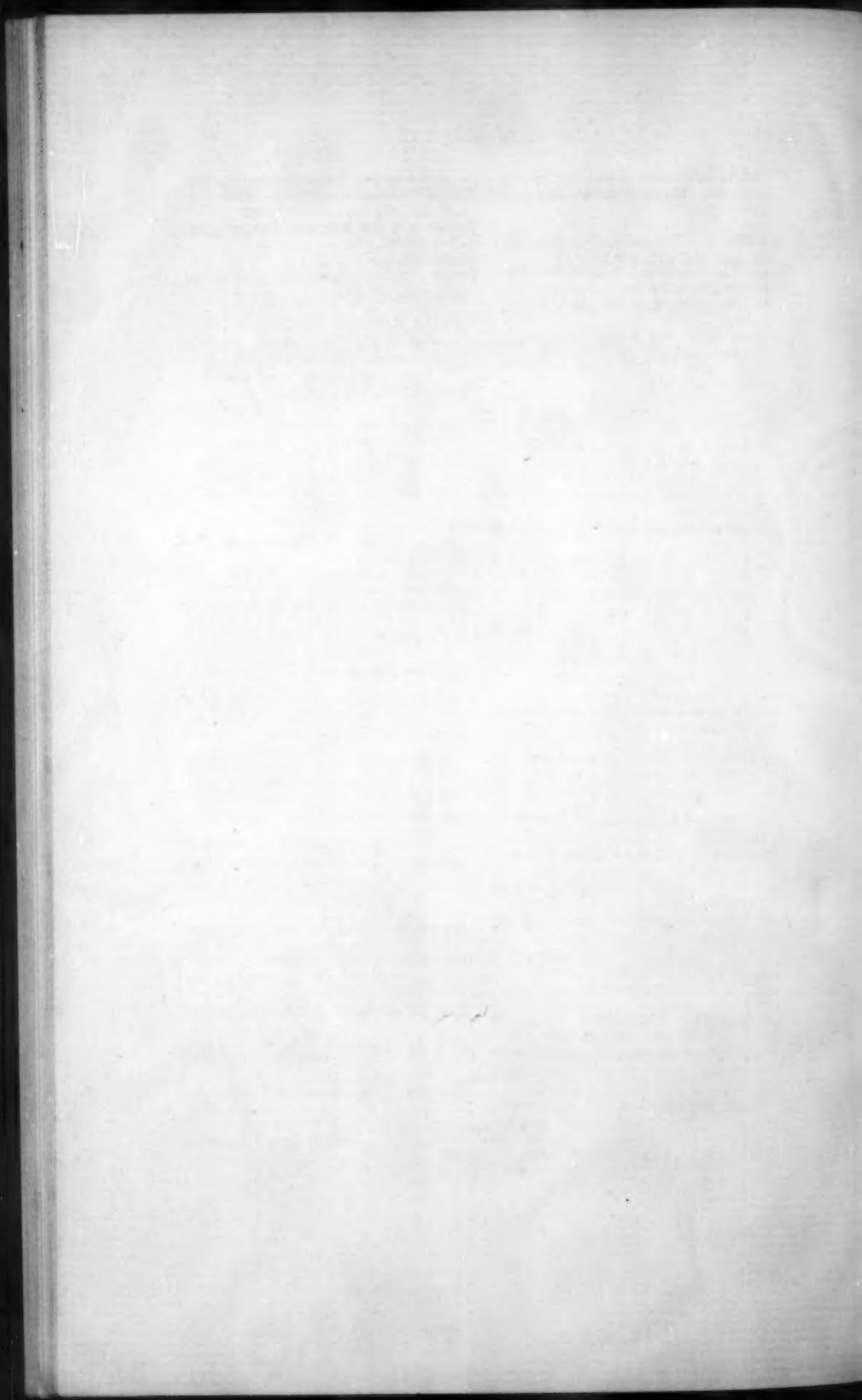
Suggestion, 366

System, Nervous, Abstracts, 4, 120, 239, 301, 389, 508, 634

Thought, Attention and Memory, Abstracts, 17, 135, 249, 312, 401, 523, 645

Traits, Mental, Inheritance of, 358

Work, Mental, 456



## PSYCHOLOGICAL REVIEW PUBLICATIONS

Original contributions and discussions intended for the Psychological Review should be addressed to  
Professor Howard C. Warren, Editor PSYCHOLOGICAL REVIEW,  
Princeton, New Jersey.

Original contributions and discussions intended for the Journal of Experimental Psychology should be addressed to  
Dr. John B. Watson, Editor JOURNAL OF EXPERIMENTAL  
PSYCHOLOGY,  
244 Madison Avenue, New York.

Contributions intended for the Psychological Monographs should be addressed to  
Dr. James R. Angell, Editor PSYCHOLOGICAL MONOGRAPHS,  
Yale University, New Haven, Conn.

Reviews of books and articles intended for the Psychological Bulletin, announcements and notes of current interest, and *books offered for review* should be sent to  
Dr. S. I. Franz, Editor PSYCHOLOGICAL BULLETIN,  
St. Elizabeth's, Washington, D. C.

Titles and reprints intended for the Psychological Index should be sent to  
Professor Madison Bentley, Editor PSYCHOLOGICAL INDEX,  
University of Illinois, Urbana, Ill.

All business communications should be addressed to  
Psychological Review Company  
Princeton, New Jersey.

(P. B.)

---

### PHILOSOPHICAL MONOGRAPHS

#### VOL. I

1. *Aesthetic Experience: Its Nature and Function in Epistemology.* W. D. FURRY. Pp. xvi + 160. \$1.60. 2. *The Philosophy of John Norris of Bemerton.* FLORA ISABEL MACKINNON. Pp. iii + 103. \$1.00. 3. *Freedom and Purpose. An Interpretation of the Psychology of Spinoza.* JAMES H. DUNHAM. Pp. iv + 126. \$1.25.

---

### LIBRARY OF GENETIC SCIENCE AND PHILOSOPHY

Vol. 1. *The Moral Life. A Study in Genetic Ethics.* By ARTHUR ERNEST DAVIES, Ph.D., Professor of Philosophy in Colorado College. xiv + 188 pages. 8vo. Cloth. Price, \$1.50 net. Postage, 10 cents.  
Vol. 2. *Darwin and the Humanities.* By JAMES MARK BALDWIN. viii + 118 pages. 8vo. Cloth. Price, \$1.50 net. Postage, 8 cents.

---

Published by

(P. B.)

## PSYCHOLOGICAL REVIEW COMPANY

## THE UNIVERSITY OF CHICAGO

### DEPARTMENTS OF PHILOSOPHY, PSYCHOLOGY, AND EDUCATION

Courses in philosophy cover the logical, metaphysical, historical, ethical, social, and political fields, and also those of the psychology and philosophy of religion.

Courses in psychology cover the fields of systematic, comparative, genetic, and applied psychology. Laboratory courses giving practical training in all phases of experimental psychology and in the construction and use of tests are provided with adequate equipment of space and apparatus.

Courses in education cover the fields of history, administration and supervision, experimental education and measurements, and general and special methods.

#### CORPS OF INSTRUCTORS

GEORGE H. MEAD  
EDWARD S. AMES  
HARVEY CARR  
FORREST A. KINGSBURY  
EDWARD S. ROBINSON  
WILLIAM BERRY  
H. R. MAYBERRY  
A. W. KORNHAUSER

JAMES H. TUFTS  
ADDISON W. MOORE  
M. W. JERNEGAN  
FRANK N. FREEMAN  
W. S. GRAY  
WM. REAVES  
CHARLES H. JUDD  
NATHANIEL BUTLER

G. T. BUSWELL  
I. N. EDWARDS  
H. C. MORRISON  
WALTER SARGENT  
S. C. PARKER  
J. F. BOBBITT  
F. S. BREED  
E. T. FILBEY

Special attention is invited to the work of the summer quarter, which begins June 19th and ends September 1st. For information regarding this and other work of the department, and also concerning fellowships, address

FOR PSYCHOLOGY AND EDUCATION, PROFESSOR CHARLES H. JUDD  
FOR PHILOSOPHY, PROFESSOR JAMES H. TUFTS

## Princeton University

### Department of Psychology

#### Graduate Courses, 1921—1922

Experimental Psychology. Introductory course. Both terms (3). Professor McComas and Dr. Zigler.

Research in Experimental Psychology. Both terms (3). Professor Brigham.  
Psychological Seminary. Topic determined in consultation with class. Both terms. Professors Warren and McComas.

Physiological Psychology. First term (3). Professor Brigham.

Psychopathology. Second term (3). Dr. Cotton.

The History and Psychology of Education. Second term (3). Professor Brigham.

b. b.

# PSYCHOLOGICAL MONOGRAPHS

## VOL. XXIII

98. Scientific Study of the College Student. HARRY DEXTER KITSON. Pp. 81. 75 cents. 99. Whole vs. Part Methods in Motor Learning. A Comparative Study. LOUISE AUGUSTUS PECHSTEIN. Pp. 88. 75 cents. 100. Yale Psychological Studies, New Series, Vol. II, No. 2. Edited by ROSWELL P. ANGIER. Pp. 159-381. \$1.75. 101. The Vertical-Horizontal Illusion. SARAH MARGARET RITTER. Pp. 114. \$1.25.

## VOL. XXIV

102. Two Studies in Mental Tests. I. Variable Factors in the Binet Tests. II. The Diagnostic Value of Some Mental Tests. CARL C. BRIDGHAM. Pp. 254. \$2.50. 103. Radiometric Apparatus for Use in Psychological and Physiological Optics. C. E. FERRELL and GERTRUDE RAND. Pp. xvi + 65. 75 cents. 104. Transfer of Training and Retroaction. LOUISE WINFIELD WEBB. Pp. 90. \$1.00. 105. Studies from the Psychological Laboratory of the University of Chicago—Reliability of Mental Tests in the division of an Academic Group. BEARDSLEY RUMBLE. Pp. 63. 75 cents. 106. Analysis of Mental Functions. CURT ROSENOW. Pp. 43. 50 cents.

## VOL. XXV

107. Retroactive Inhibition as Affected by Conditions of Learning. EDWARD CHASE TOLMAN. Pp. 50. 75 cents. 108. University of Iowa Studies in Psychology, No. 7. CARL E. SHASHORE. Pp. 163. \$1.75. 109. A Higher Scale of Mental Measurement and its Application to Cases of Insanity. A. J. ROSANOFF, HELEN E. MARTIN and ISABEL R. ROSANOFF. Pp. 118. \$1.50. 110. An Experimental Study of Attention from the Standpoint of Mental Efficiency. SHOAN MASUZO FUKUYA. Pp. 48. 50 cents. 111. The Interference of Will-Impulses. ABRAHAM A. HORACK. Pp. 158. \$1.75.

## VOL. XXVI

112. Psychology of Clothing. GEORGE VAN NESS DEARBORN. Pp. vi + 72. \$1.15. 113. Some Imaginal Factors Influencing Verbal Expression. ESTHER E. SHAW. Pp. 187. \$2.00. 114. Learning Curve Equation. L. L. THURSTONE. Pp. 51. 75 cents. 115. The Effect of Alcohol on the Intelligent Behavior of the White Rat and its Progeny. ADA HART ARLETT. Pp. 50. 75 cents. 116. The Form of the Learning Curves for Memory. CONRAD L. KJERSTAD. Pp. 89. \$1.35. 117. An Introspective Analysis of the Process of Comparing. SAMUEL W. FERNBERGER. Pp. 161. \$2.40.

## VOL. XXVII

118-129. Psychological Studies from the Catholic University of America. Edited by EDWARD A. PAGE. \$5.50 per volume. 118. A Study and Analysis of the Conditioned Reflex. IGNATIUS A. HAMEL. Pp. 66. 75 cents. 119. Image and Meaning in Memory and Perception. THOMAS VERNER MOORE. Pp. 230. \$2.70. 120. The Correlation Between Memory and Perception in the Presence of Diffuse Cortical Degeneration. THOMAS VERNER MOORE. Pp. 49. 55 cents. 121. Clinical and Psychoanalytic Studies: I. Conscious and Unconscious Factors in Symbolism. PAUL HANLY FURFEE. II. Hypnotic Analogies. THOMAS VERNER MOORE. III. Concomitants of Amentia. MIRIAM E. LOUGHLIN. Pp. 96. \$1.65. 122. The Development of Meaning. AGNES R. McDONOUGH. Pp. 75. \$1.85.

## VOL. XXVIII

128. Quantitative Aspects of the Evolution of Concepts. CLARK L. HULL. Pp. 85. \$1.85. 129. An Experimental Analysis of a Case of Trial and Error Learning in the Human Subject. GEORGE S. SNODDY. Pp. 78. \$1.25. 130. Work with Knowledge of Results versus Work without Knowledge of Results. GEO. F. AKPE. Pp. 41. 65 cents. 131. Individual Differences in Finger Reactions. ESTHER L. GATEWOOD. Pp. 43. 65 cents. 132. The Lag of Visual Sensation in its Relation to Wave Lengths and Intensity of Light. MARION A. BILLS. Pp. 101. \$1.50. 133. Studies from the Psychological Laboratory of the University of Chicago—Some Factors Determining the Degree of Retroactive Inhibition. EDWARD STEVENS ROBINSON. Pp. 57. 90 cents. 134. The Higher Mental Processes in Learning. JOHN C. PETERSON. Pp. 121. \$1.80.

## VOL. XXIX

135. A Qualitative Analysis of the Process of Forgetting. HAROLD R. CROSLAND. Pp. 159. \$2.25. 131. The Growth of Intelligence. EDGAR A. DOLL. Pp. 130. \$2.00. 132. Mental and Educational Measurements of the Deaf. JEANNETTE CHASE REAMER. Pp. 180. \$2.00. 133. A Socio-Psychological Study of Fifty-three Supernormal Children. WILLIAM T. Root. Pp. 184. \$2.75.

## VOL. XXX

134. A Tentative Standardization of a Hard Opposites Test. MARIE HACKL MEANS. Pp. 65. \$1.00. 135. Studies from the Psychological Laboratory of the University of Chicago—The Influence of the Time Interval Upon the Rate of Learning in the White Rat. JOSEPH U. YARBROUGH. Pp. 52. 75 cents. 136. Critical and Experimental Studies in Psychology from the University of Illinois. Edited by MADISON BENTLEY. Pp. 94. 137. The Definition of Intelligence in Relation to Modern Methods of Mental Measurement. J. LEROY STOCKTON. Pp. 116. 138. Personnel Selection of Graduate Engineers. BRUCE V. MOORE. P. B.)

## Directory of American Psychological Periodicals

**American Journal of Psychology**—Ithaca, N. Y.; Morrill Hall.  
Subscription \$6.50. 600 pages annually. Edited by E. B. Titchener.  
Quarterly. General and experimental psychology. Founded 1887.

**Pedagogical Seminary**—Worcester, Mass.: 950 Main Street.  
Subscription \$5. 575 pages annually. Edited by G. Stanley Hall.  
Quarterly. Pedagogy and educational psychology. Founded 1891.

**Psychological Review**—Princeton, N. J.: Psychological Review Company.  
Subscription \$4.25. 480 pages annually.  
Bi-monthly. General. Founded 1894. Edited by Howard C. Warren.

**Psychological Bulletin**—Princeton, N. J.: Psychological Review Company.  
Subscription \$5. 720 pages annually. Psychological literature.  
Monthly. Founded 1904. Edited by Shepherd I. Franz.

**Psychological Monographs**—Princeton, N. J.: Psychological Review Company.  
Subscription \$5.50 per vol. 500 pp. Founded 1895. Ed. by James R. Angell.  
Published without fixed dates, each issue one or more researches.

**Psychological Index**—Princeton, N. J.: Psychological Review Company.  
Subscription \$1.50. 200 pp. Founded 1895. Edited by Madison Bentley.  
An annual bibliography of psychological literature.

**Journal of Philosophy**—New York; Sub-Station 84.  
Subscription \$4. 728 pages per volume. Founded 1904.  
Bi-weekly. Edited by F. J. E. Woodbridge and Wendell T. Bush.

**Archives of Psychology**—Sub-Station 84, N. Y.: Archives of Psychology.  
Subscription \$5. 500 pp. per vol. Founded 1906. Ed. by R. S. Woodworth.  
Published without fixed dates, each number a single experimental study.

**Journal of Abnormal Psychology and Social Psychology**—Boston.  
Subscription \$5. Richard G. Badger. Edited by Morton Prince.  
Bi-monthly. 432 pages annually. Founded 1906. Abnormal and social.

**Psychological Clinic**—Philadelphia: Psychological Clinic Press.  
Subscription \$2.50. 288 pages. Ed. by Lightner Witmer. Founded 1907.  
Without fixed dates (9 numbers). Orthogenics, psychology, hygiene.

**Training School Bulletin**—Vineland, N. J.: The Training School.  
Subscription \$1. 160 pp. ann. Ed. by E. R. Johnstone. Founded 1904.  
Monthly (10 numbers). Psychology and training of defectives.

**Journal of Educational Psychology**—Baltimore: Warwick & York.  
Subscription \$4. 576 pages annually. Founded 1910.  
Monthly (9 numbers). Managing Editor, Harold O. Rugg.  
(Educational Psychology Monographs  
Published separately at varying prices. Same publishers.)

**Comparative Psychology Monographs**—Baltimore: Williams & Wilkins Co.  
Subscription \$5. 500 pages per volume. Edited by W. S. Hunter.  
Published without fixed dates, each number a single research.

**Psychoanalytic Review**—Washington, D. C.: 3617 10th St., N. W.  
Subscription \$6. 500 pages annually. Psychoanalysis.  
Quarterly. Founded 1913. Ed. by W. A. White and S. E. Jelliffe.

**Journal of Experimental Psychology**—Princeton, N. J.  
Psychological Review Company. 480 pages annually. Experimental.  
Subscription \$4.25. Founded 1916. Bi-monthly. Ed. by John B. Watson.

**Journal of Applied Psychology**—Worcester, Mass.: Florence Chandler.  
Subscription \$4. 400 pages annually. Founded 1917.  
Quarterly. Edited by James P. Porter and William F. Book.

**Journal of Comparative Psychology**—Baltimore: Williams & Wilkins Co.  
Subscription \$5. 500 pages annually. Founded 1931.  
Bi-monthly. Edited by Knight Dunlap and Robert M. Yerkes.

